ECONOMIC AND SOCIAL SURVEY OF MEHSANA DISTRICT

THE INDIAN SOCIETY OF AGRICULTURAL ECONOMICS
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India is a vast country with diverse geographic and physiographic features. It is, therefore, to be expected that the economic and social conditions would also vary substantially from region to region, according to the impact of the prevailing environment on the population. A general plan of economic development for the country as a whole, unless it is based on an investigation and study of the conditions and needs of every distinct region, would naturally fail to disclose all the problems which are peculiar to the various natural regions of the country. Regional surveys form the basis for the formulation of policies and programmes under regional developmental plans. These are highly essential in any scheme of integrated planning, particularly in the case of India. The Planning Commission have in their Report on the First Five Year Plan recognised the necessity and importance of regional studies in planning. They observed "that the needs and priorities of different regions as well as their potential for short-term and long-term development should be taken into account in drawing up and continually reviewing their developmental programmes. There is always a possibility that at the State Head-quarters, regional aspect may receive less consideration than they deserve." It was on such a consideration that this Society undertook to carry out a Social and Economic Survey of the Mehsana District at the request of Shri Tulsidas Kilachand, M.P., President of the Uttar Gujerat Vikas Mandal.

The main objective of the Survey has been to ascertain the nature and magnitude of the problems in the region, as an essential preliminary to the evolution of a plan for development in the District. It is intended to spotlight some of the problems which are really important for the region but which fail to receive the attention they deserve when they are reviewed in the context of a larger plan. In choosing a large area as that of a District for a social and economic survey, the object was also to stress the importance of the organisation of District Administration in the implementation of the schemes under planning. In India, the District has always been recognised as the most important compact unit for purposes of administration. Though in the previous decades, the District as a unit was significant only for the purpose of revenue administration, its role in developing the resources and improving the economic life of the population in the area has been increasingly realised in recent years. The District Officer has been an effective intermediary between the State Government which is responsible to the Legislature on the one hand and the Local Self-Governing Bodies which are directly in touch with the population in the District on the

other. In the execution of schemes for developments, the District forms a convenient unit which can co-ordinate effectively the various programmes which are chosen for implementation.

The study has revealed the necessity for understanding the specific problems of the region in the proper perspective and in the background of local conditions and has also underlined the administrative deficiencies which require to be corrected. From a survey of the position in the District, it has been made clear that the failures in the implementation of some of the items of development programmes have been largely due to lack of proper adjustments in organisation, absence of essential research and preliminary planning and want of co-ordination and continuity of action. The failure of so many irrigation tanks in the District reveals a sad record of defective investigation and compilation of insufficient and unreliable data about the minor irrigation projects. Some of the very important projects like soil conservation at Hirapura, sheep rearing and wool grading schemes at Patan and ghee grading scheme at Dhinoj etc. have been given up mostly due to inefficiency in execution or lack of continuity in carrying out projects once undertaken. The whole problem of soil erosion is assuming alarming proportions and needs immediate attention. Similarly, the problem of Rabari colonisation and settlement is not properly attended to as also the development of feeder roads. All these require special attention both by the State and the people.

All these defects would show that in tackling the development problems of a District the success of any plan would largely depend on the agencies created for the purpose. The present administrative set-up, though it might have suited the objectives of previous administration, requires a thorough overhaul in the light of the altered conditions and the special needs that have arisen due to various factors. The situation indicates that more stress should be laid towards developing local agencies for ensuring local co-operation and training local talent for purposes of administration so that in the course of time the people in the locality will not only be able to participate in the projects sponsored by Government but may also be able to assess their deficiencies and bring them to the notice of Government. It would then be possible for Government to prepare a plan of development that could be carried out systematically and in full co-operation of local agencies.

It is hoped that this regional survey will help in understanding the basic requirements for a constructive programme. It is also hoped that the present general study will lead to a more intensive study of smaller areas and of some of the villages so that the social and economic

needs of the people may be more clearly brought out. For example, the new merged areas of the old Radhanpur State would need special study.

The study represents a picture of the social and economic conditions of the people at a particular time. A number of developments have taken place thereafter. A Community Project with a comprehensive programme is in operation in the Kalol-Vijapur area now. A number of tube-wells are being sunk in the Vijapur area. The Sabarmati River project is under active consideration. All these developments should lead to the prosperity of the region.

The entire study was carried out by Dr. I. G. Acharya, M.A.,Ph.D., Research Officer in the Society. Considerable help was rendered by Mr. A. Correia-Afonso, the Research Assistant in the Society, in checking up the statistical and other data and seeing the study through the press.

Bombay,
20th December, 1954.

MANILAL B. NANAVATI
President

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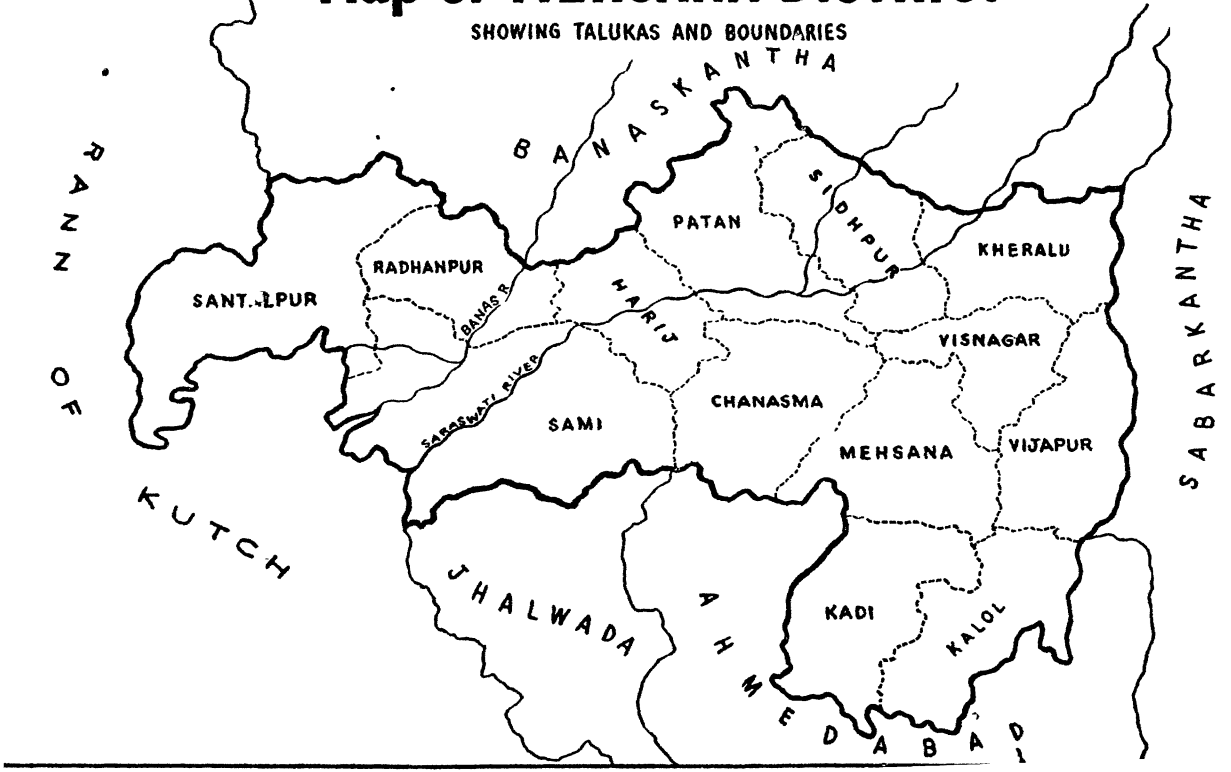
Map of MEHSANA DISTRICT

SHOWING TALUKAS AND BOUNDARIES



CHAPTER I

NATURAL ENVIRONMENT

The mainland of Gujerat has three divisions : Northern, Central and Southern. Mehsana district belongs to the Northern part—a region with sloping river valleys, a belt of saline tract towards the north-west and west, a fertile and wooded region much cut up by ravines in the south-east and almost entirely bounded on its west by the river Sabarmati.

AREA

The area of the district in the former Baroda State was 3,070 square miles, but after its merger into Bombay State, the district has been reconstituted and the area covers 4,126 square miles approximately. At present, the maximum length of the district is nearly 72 miles from Muna in Patan taluka in the north to Chandrasan in Kadi taluka in the south. The maximum breadth comes to 112 miles approximately, ranging from village Mulana in Kheralu taluka in the east to the village Piparla in Santalpur taluka in the west. From south to north the breadth varies from 26 miles to 112 miles, and from east to west the length varies from 13 miles to 72 miles.

BOUNDARIES

The northern side of the district is bounded by the desert of Kutch, the river Banas and the Banaskantha district. On the south it is bounded by the desert of Kutch and Vinzuwada, Vanod and Dasada (Saurashtra) and Ahmedabad district. On the eastern side, there is river Sabarmati and the Sabarkantha district while on the western side it is covered by the Runn of Kutch.*

PHYSIOGRAPHY

The area on the whole is more or less flat and sloping from north-east to south-west. There are no hills in the district, but far to the east and north are seen the spurs of the Arvalli hills.

On the whole the surface drainage is satisfactory. The entire area is drained by the rivers Sabarmati, Rupen, Saraswati and Banas and their numerous tributaries. The Saraswati flows by Sidhpur and Patan talukas and disappears in the desert of Kutch. The river bed is wide but the water is shallow. The river Banas goes through Patan and Harij talukas while the Sabarmati passes by Vijapur taluka. The river Rupen flows through Kheralu, Visnagar, Mehsana and Chanasma talukas.

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*For details about reconstitution see appendix No. 1.

All these rivers are very shallow and do not have permanent flow. Except for the areas in the south of North Gujerat plains bordering on the little Runn, the subsoil drainage is good, the soil being deep alluvial loamy sand to sandy. The area referred to as bordering on the little Runn is sandy clay to loamy clay with high saline contents and with a defective subsoil drainage. These areas are Radhanpur, Santalpur, Sami, Harij, Chanasma and the western part of Patan taluka.

Rainfall

The average annual rainfall ranges from 19 to 30 inches with some variation in different parts of the district. The average rainfall in the whole district in 1948-49 was only 9.94 inches while that in 1947-48 was 21.72 inches. The decennial average for the whole district comes to 25.8 inches. The distribution of rainfall according to talukas shows that the areas near the Runn of Kutch usually have less rainfall. Besides the scantiness and geographical mal-distribution, the rainfall is not well time-spaced. Uncertainty of rainfall is greater on the western side nearer to the Runn.

Vegetation

The whole district is without any forest or any appreciable dense growth of trees and plants either on the waste lands or on private holdings. The whole of the area is thus denied the protective benefits of forests in protecting it against soil erosion either by wind or by water.

Climate

Throughout Mehsana district the climate is hot but healthy. Temperature in summer goes upto 116° to 120°F and in winter sometimes comes down upto 38°F. There is, however, considerable difference in the intensity of heat experienced. Climatic conditions are more oppressive on the north-western side as compared to the south-eastern side. Wind velocity during May and June appears to be between 30 to 40 miles per hour. Dust storms are very common on the side of the Runn. Lack of good tree coverage and live hedges around cultivated fields, absence of big water masses and mountain ranges and proximity of the Runn of Kutch have combined to form the climatic conditions of the region.

Soil

In the whole of the district, the soil is mostly of the light sandy kind. Patches of black soil are met in the southern and western part

of Kadi taluka, western part of Kalol taluka and some parts of Patan taluka. In Harij taluka salt contents are found in the soil to a great extent. Except for these parts, the soil is sandy and would give good yields if good seeds, manures and water are supplied to the cultivators.

Minerals

As far as the mineral resources are concerned, the district is not known to be very rich. The geological survey made in the region shows that it has got good deposits of china clay and sand stories, and very little of anything else. A list of mineral resources of the region with their location, description and quantity available is given in appendix No. 2.

ADMINISTRATIVE DIVISIONS

For administrative purposes the district is divided into thirteen divisions called talukas. They are as follows :—

Chanasma	Patan	Vijapur
Kheralu	Sidhpur	Harij
Visnagar	Kadi	Sami
Mehsana	Kalol	Santalpur
		Radhanpur

CHAPTER II

POPULATION

INTRODUCTION

The district of Mehsana has an area of 4,126 square miles—nearly 11.2% of the total area of the Gujerat region and 3.7% of the area of Bombay State. According to the 1951 census, the population of the district comes to 1,471,662 persons which form 4.1% of the total population of Bombay State.

TABLE I

AREA AND POPULATION OF MEHSANA DISTRICT : 1951

	Area in square miles	Population ('000)	Density
Mehsana	4,126 (3.7%)	1,471 (4.1%)	357
Gujerat	36,542 (32.7%)	11,397 (31.6%)	312
Bombay State	111,434	35,956	322

Source : Census of India, 1951.
(Figures in brackets indicate percentage to the total of Bombay State)

It is clear from the above table that compared to the relative share of area of Mehsana district to that of Bombay, its share of population is greater. Compared even to the area and population of the Gujerat region as a whole, the percentage share of area comes to 11.2 while that of population comes to 12.9. Thus the population pressure in relation to total area is fairly high compared both to Gujerat and Bombay State as a whole. The figures of density of population per square mile also reveal the same fact.

VARIATION IN POPULATION

The increase in population of Mehsana district during the last 50 years has been higher than that of the Indian Union. While the

increase in the Indian Union has been to the extent of 50%, in Mehsana district it has increased by 76%.

TABLE II

VARIATION IN POPULATION IN MEHSANA DISTRICT : 1901-1951

Year	Population	Percentage increase in population during the decade	Density
1901	834,744	—	—
1911	834,162	— 0.3	—
1921	900,578	+ 8.2	295
1931	1,010,077	+12.1	329
1941	1,175,097	+16.3	383
1951	1,471,662	+25.2	357
1901-1951 ..	—	+76.3	—

Source : Statistical Abstracts, Baroda State, 1947, and Mehsana District Census Handbook, 1951.

It will be seen that since 1901, there has been a gradual increase during every decade, the rate of increase going higher every time. The increase of 25.2% in the last decade has been a little more as compared to previous years. This is due to the reconstitution of the district, inclusion of some new regions and expansion of the total area. The figures of the density of population also clearly indicate the increase in population. The fall in density during the last decade is mainly due to the inclusion of very sparsely populated area of Sami, Santalpur and Radhanpur and removal of the area of Dehgam and Atarsumba from the Mehsana district. From the point of view of studying the propensity of population growth in various parts of the district it is worthwhile to know the density per taluka during the last two decades.

TABLE III

DENSITY OF POPULATION BY TALUKAS : 1941-1951

Taluka or Peta	Density in 1951	Density in 1941	Difference
Chanasma	334	292	+42
Harij	212	160	+52
Kadi	385	345	+40
Kalol	591	483	+108
Kheralu	389	340	+49
Mehsana	511	440	+71
Patan	416	352	+64
Radhanpur	170	107	+63
Sami	92	71	+21
Santalpur	92	45	+47
Sidhpur	606	533	+73
Vijapur	562	485	+77
Visnagar	548	464	+84

Source : Census Tabulation Office, Bombay.

It is evident from the above table that the talukas of Sidhpur, Kalol and Vijapur with a density of 606, 591 and 562 per square mile are the most densely populated talukas in the district. Reasons for such a high pressure seem to be that these regions are more advanced industrially and have definitely superior agricultural conditions to that of any other region in the district. Sami, Santalpur and Radhanpur being nearer to the Runn of Kutch have got very sparse population. The whole pattern of economic activities of these talukas is rather of a backward type. The unagreeable climatic conditions, the poor type of soil and the scarcity of water lead to a very low density in these talukas.

Thus it is clear that population is very unequally distributed in the district, variation in density being from 92 to 606 persons per square mile. It will be desirable to lessen the pressure of population on land in densely populated areas of the district and divert it to sparsely populated talukas by the economic development of these regions.

URBANISATION

The classification of population into rural and urban is important in so far as it indicates in several ways the stage of economic development of the region concerned. From this point of view, the situation in Mehsana district is as stated below :—

TABLE IV

URBAN POPULATION IN DISTRICTS OF GUJERAT: 1951

District	Urban Population	Total Population	Percentage of Urban Population
Mehsana	3,23,231	1,471,662	22.0
Banaskantha	56,842	748,796	7.6
Sabarkantha	49,012	684,017	7.1
Amreli	86,436	317,203	27.0
Baroda	297,218	1,194,746	24.8
Ahmedabad	996,185	1,685,630	58.4
Kaira	455,535	1,612,426	28.2
Panchmahal	137,147	1,148,432	11.9
Broach	129,005	706,035	18.2
Surat	388,651	1,827,842	21.2
Gujerat	2,919,262	11,396,789	25.6
Bombay State	11,170,340	35,956,150	31.1

Source : Census of India, 1951.

The percentage of urban population to total in Mehsana district comes to 22. Compared to districts like Banaskantha, Sabarkantha, Panchmahal and Broach, Mehsana district is more urbanised. Ahmedabad district stands at the top of the list with 58% of urban population. The low percentage of urban population in the district is an indication of a backward stage of economic development.

It is interesting to study the trend of urbanisation in the district. It would reveal, in a way, the process of economic changes and development of the region. The trend of urbanisation in Mehsana district is as follows :—

TABLE V

TREND OF URBANISATION IN MEHSANA DISTRICT

Year	Percentage of increase in Urban Population
1931	17.4
1941	21.4
1951	22.0

The above figures indicate that there has been a gradual increase in the rate of urbanisation from decade to decade. The growth during the last decade would have been more but for the inclusion of the highly rural areas of Sami, Santalpur and Radhanpur. The following table shows the stage of urbanisation in various talukas of the district and its unbalanced nature.

TABLE VI

PERCENTAGE OF RURAL-URBAN POPULATION IN TALUKAS OF MEHSANA DISTRICT : 1951

Taluka	Percentage of Rural Population	Percentage of Urban Population
Chanasma	84.7	15.3
Harij	79.3	20.7
Kadi	83.5	16.5
Kalol	78.2	21.8
Kheralu	75.1	24.9
Mehsana	84.6	15.4
Patan	71.1	28.9
Radhanpur	73.8	26.2
Sami	100.0	—
Santalpur	100.0	—
Sidhpur	69.2	30.8
Vijapur	74.8	25.2
Visnagar	72.4	27.6
Mehsana District	78.1	21.9

Source ; Mehsana District Census Handbook, 1951.

It is apparent from the above table that the talukas of Sami and Santalpur are cent per cent rural. As against this, Sidhpur, Patan and Visnagar are fairly advanced in respect of the degree of urbanisation. During the past decade urban population has increased largely in Kalol and Sidhpur talukas, the percentage increase being 48 and 39 respectively. The outstanding reason for the same seems to be the industrial progress of the talukas.

Towns and Villages

The district of Mehsana has 27 towns out of which 15 are municipal. Villages number 1,238 in all. There is no town with a population exceeding 50,000. To know the exact pattern of distribution of population, it is worthwhile to study the distribution of towns and villages according to the size of population.

TABLE VII

TOWNS AND VILLAGES CLASSIFIED BY POPULATION : 1951

Size	Number	Percentage
1. Less than 500	477	37.7
2. 500—1,000	372	29.4
3. 1,000—2,000	257	20.3
4. 2,000—5,000	130	10.3
5. 5,000—10,000	17	1.3
6. 10,000—20,000	6	0.5
7. 20,000—50,000	6	0.5
Total	1,265	100.00

Source : Census Tabulation Office, Bombay.

The table shows that nearly 37% of the population resides in villages having a population of less than 500. The second big portion is formed by villages having a population between 500 to 1000. Thus, the whole pattern of the district is still predominantly rural with a few places showing urban growth.

The progress and rate of urbanisation can be discerned if comparison of such a classification is available over a number of decades. As the district was reconstituted in 1951 it is desirable that figures to be examined be related to previous decades when the total area remained more or less the same.

TABLE VIII

TOWNS AND VILLAGES IN MEHSANA DISTRICT CLASSIFIED BY POPULATION

Size		1931	1941	Variation
1. Less than 500	..	455	393	—62
2. 500— 1,000	..	312	329	+17
3. 1,000— 2,000	..	192	216	+24
4. 2,000— 5,000	..	80	99	+19
5. 5,000—10,000	..	7	11	+ 4
6. 10,000—20,000	..	5	7	+ 2
7. 20,000—50,000	..	2	2	—
Total	..	1,053	1,057	+ 4

Source : Statistical Abstracts, Baroda State.

Examining the variation in the above composition, we find that during the period 1931 to 1941, there is a shift of population from villages with a population below 500 to bigger villages. The towns of almost all sizes have increased during the decade, this being more so in the size groups two, three and four.

The process of urbanisation, going on from year to year is also evident from the phenomenal growth of the size of certain important towns of the district. As for example, during last 50 years, the population of Harij town has increased by 641.5% and population of Mehsana town has increased by 145%.

In this process of urbanisation one fact to be noticed is that most of the urbanisation that exists in the district today is commercial rather than industrial. It is not the outcome of industrialisation as such. Town like Harij has grown to such a size because it is an important railway station and distributing centre. Mehsana has grown because it is an important railway junction. Unjha has developed because it is a big centre for marketing. The whole trend towards urbanisation seems to have arisen to a great extent due to growth of commerce.

Displaced Persons

The influx of displaced persons from West Pakistan territory has not been great. From the year 1946 upto the year 1951, the total immigration has been to the extent of 7,421 persons only. This figure when compared to the total strength of population of the district as a whole, is a very insignificant one. Out of this, nearly 50% have settled in the rural areas of Radhanpur, Sami, Santalpur and Harij. The rural areas of other districts have a very negligible proportion of such persons. Among urban areas influx of displaced persons is greater at Sidhpur, Patan, Mehsana, Radhanpur and Harij.

Livelihood Categories

It is generally found that a larger percentage of rural population signifies a larger proportion of the people deriving their livelihood from agricultural sources. Mehsana district conforms to this rule. The percentage of population dependent upon agriculture as the main source of livelihood is 61 in Mehsana district compared to 70 in Indian Union, 61 in Bombay State and 62 in Gujerat. In various talukas, the proportion is more or less the same except in Chanasma where 68.5% of population is occupied in agriculture.

If we sub-divide persons occupied in agriculture into

1. Owner cultivators
2. Tenant cultivators
3. Labourers, and

TABLE

DISTRIBUTION OF POPULATION BY

	Agriculture				
	Owner Cultivators	Tenant Cultivators	Labourers	Non-cultivating Landlords and Rent Receivers	Total
1	2	3	4	5	6
Mehsana District	6,93,134	65,689	83,688	55,092	8,97,603
	(47.1)	(4.5)	(5.7)	(3.7)	(61.0)
Gujerat ..	47,98,000	11,16,000	9,34,000	2,37,000	70,85,000
	(42.0)	(9.7)	(8.3)	(2.0)	(62.0)
Bombay State ..	1,46,49,000	34,85,000	32,53,000	7,12,000	2,20,99,000
	(41.0)	(9.4)	(9.0)	(2.0)	(61.4)
Indian Union ..	16,73,46,000	3,16,40,000	4,48,12,000	53,24,000	24,91,22,000
	(46.9)	(8.8)	(12.6)	(1.5)	(69.8)

Source—Census of India, 1951.

IX

THEIR LIVELIHOOD CATEGORIES

Tertiary					
Non-agri-cultural Production	Commerce	Transport	Services and Miscellaneous	Total	Grand Total
7	8	9	10	11	12
2,06,516	1,18,030	22,410	2,27,103	5,74,059	14,71,662
(14.0)	(8.0)	(1.5)	(15.5)	(39.0)	
15,87,000	8,64,000	1,94,000	16,67,000	43,12,000	1,13,97,000
(14.0)	(7.5)	(1.5)	(15.0)	(38.0)	
49,49,000	27,36,000	8,02,000	53,70,000	1,38,57,000	3,59,56,000
(14.0)	(7.6)	(2.0)	(15.0)	(38.6)	
376,60,000	2,13,09,000	56,20,000	4,29,83,000	10,75,72,000	35,66,94,000
(10.6)	(6.0)	(1.6)	(12.0)	(30.2)	

4. Non-cultivating landlords and rent receivers, we get the following classification :—

TABLE X

PERCENTAGE DISTRIBUTION OF PERSONS DERIVING LIVELIHOOD FROM AGRICULTURE BY SUB-OCCUPATIONS

	Owner Cultivators	Tenant Cultivators	Labourers	Non-Cultivating Landlords and Rent Receivers
Mehsana District ..	77.2	7.3	9.3	6.2
Gujerat ..	67.0	15.0	15.0	3.0
Bombay State ..	66.0	16.0	15.0	3.0
Indian Union ..	67.0	13.0	18.0	2.0

Source : Census of India, 1951.

It is clear that the percentage of owner cultivators is fairly high in Mehsana district, compared to Gujerat, Bombay State or the Indian Union. The percentage of tenant cultivators and landless labourers is relatively low. The percentage of non-cultivating landlords and rent receivers is higher in Mehsana than in any other region stated above. This means that in Mehsana district owner-cultivation is more common than in any other region. This is a very happy situation and is a very favourable factor in accelerating the agricultural development of the region.

Studying the above composition in various talukas of the district, we get the following interesting picture :—

TABLE XI

LIVELIHOOD CLASSES IN AGRICULTURE (PERCENTAGE)

Talukas	Owner Cultivators	Tenant Cultivators	Labourers	Non-cultivating Landlords and Rent Receivers
Chanasma ..	80.7	5.0	5.8	8.5
Harij ..	72.8	13.4	7.6	6.2
Kadi ..	73.5	5.1	13.7	7.7
Kalol ..	71.8	5.7	14.0	8.5
Kheralu ..	81.1	8.2	5.8	4.9
Mehsana ..	80.2	3.6	9.6	6.6
Patan ..	77.9	6.1	11.3	4.7
Radhanpur ..	93.4	1.4	3.0	2.2
Sami ..	82.5	1.7	10.7	5.1
Sidhpur ..	81.5	5.5	7.9	5.1
Santalpur ..	10.1	84.5	1.3	4.1
Vijapur ..	78.4	4.6	10.4	6.6
Visnagar ..	82.3	4.0	8.8	4.9

Source : Mehsana District Census Handbook, 1951.

Talukas like Radhanpur, Sami, Sidhpur, Vijapur and Visnagar have got a very high percentage of owner cultivators—more than 80%. It is only in Santalpur that the percentage is 10 only. There, tenant cultivation forms 84.5%. It seems that the big landowners of Santalpur—probably the thakores of the pre-merger times—have preferred so far to lease their lands rather than cultivate them through labourers.

In a similar comparison of persons earning their livelihood from non-agricultural pursuits, it is found that Mehsana district has nearly the same percentage of population occupied in commerce as Gujerat, Bombay State or the Indian Union.

TABLE XII

PERCENTAGE DISTRIBUTION OF LIVELIHOOD CLASSES IN NON-AGRICULTURAL OCCUPATIONS : 1951

Region	Non-Agricultural Production	Commerce	Transport	Services and Miscellaneous
Mehsana ..	35	20	3.9	39
Gujerat ..	37	20	4.4	37
Bombay State ..	36	20	5.8	40
Indian Union ..	35	20	5.2	40

Source : Census of India, 1951.

In non-agricultural production in Mehsana the percentage is almost the same as in other regions, while in transport it is lower. The percentage in transport would have been still lower but for the location of the Mehsana Railway Junction in the district. As the taluka-wise statement shows, the number of persons occupied in transport in talukas other than Mehsana, Vijapur, Sidhpur and Kalol is very negligible. The percentage in miscellaneous is almost the same as in other regions.

The occupational pattern reveals that with three-fifths of the population occupied in agriculture, the region is still in a primary stage of development. With only 14% of the population occupied in production other than agricultural production, it is clear that industrialisation has not made any headway. The larger proportion of population depending upon tertiary as compared to secondary industries indicates the commercial and trading character of the district.

BACKWARD CLASSES

The extent of progress made by any region in economic, social and cultural matters should not be measured by the achievements of the more advanced section of the population only. The disparity between the standards achieved by the advanced and backward groups of the population should also be looked into. Such a disparity is always a potential danger to social harmony and concord. If the backward classes are left to themselves, it is very doubtful whether they can ever emerge out of their depressed state. It should also be remembered that if no efforts are made to uplift them, their consciousness may take undesirable form and the problem of improving their condition may become more difficult.

MAGNITUDE AND EXTENT OF THE PROBLEM

Looking to the economic, social and cultural norms of various castes in the district, it is really difficult to accept the Government of Bombay's list of "Backward Classes" as an accurate or comprehensive one. Before merger, Baroda State had a separate list of Backward Classes recognised for certain purposes. After integration it was decided by the Bombay State that there should be one classification of backward communities for the entire State. Consequently, some communities which were treated as backward in the old Baroda State ceased to be so considered in the new Bombay State list.

But apart from this classification, the caste composition of the population of the district would help us to know the extent of population which may be considered as backward. It is highly regrettable that in the 1951 census, classification of population according to caste is omitted. In the absence of that we have to fall back upon figures available in the 1941 census of Baroda State.

TABLE XIII

CASTE COMPOSITION IN MEHSANA DISTRICT : 1941

Castes	Percentage of population to Total.
Hindus	90
Muslims	6
Christians	Negligible
Others	4

Source : Baroda Census, 1941.

It is clear that the district is mainly populated by Hindus. It is interesting therefore to know the composition of the Hindu population to ascertain the proportion of backward castes. The classification of advanced and backward is adopted from the Census Report of 1941 which enumerates a caste as advanced where male literacy percentage is 50% and over.

TABLE XIV

COMPOSITION OF HINDU POPULATION : ADVANCED AND BACKWARD

Advanced Class		
Brahmin	4.8	
Jain	2.3	
Patidar	24.9	
Other Hindus	17.9	49.9%
Backward Class		
Anjana Chaudhari	3.9	
Bharward-Rabaris	4.9	
Depressed Classes	9.6	
Makwana	2.0	
Primitive and Forest tribes (Hindus) ..	0.3	
Rajput	3.9	
Raval	2.7	
Thakarda	20.9	
Vaghri	1.9	50.1%
Hindus		100.0%

Source : Baroda Census, 1941.

It will be noticed from the above analysis that a considerable portion of the population of Mehsana district can be grouped as backward. In most of the castes literacy is very low, and social as well as economic handicaps prevail to such an extent that there is no adequate opportunity for group or individual self-development. Among these backward classes also, the predominance of Thakardas over others is quite significant. In any programme of development in the region, special attention will have to be given to this caste and its problems.

THE THAKARDAS

It is a caste of kolis mainly found in Mehsana district. They are so called from their half-Rajput descent. The bulk of their numbers are of the backward type, half aboriginal and thriftless. There are various sub-groups among Thakardas also, like Chunvalia, Patan-

wadia etc. Chunvalia are mainly found in Kadi taluka. Some years ago the whole caste was a terror to North Gujerat. Led by their chiefs, they often raided the surrounding villages. Their criminal tendencies have still not abated, even though some of them are settled down as cultivators and labourers. Among Patanwadias also the same characteristics are visible. They are intelligent, industrious and brave, but they are not educated as to be of much benefit to society. Their efficiency as cultivators is far below that of other cultivating classes. Their literacy standard is very low. It is interesting to note, that in 1952, a village named Motanayata in Patan taluka largely populated by Thakardas refused to have a school in the village and stated in writing that they will never send their children to school. All attempts at persuasion by teachers and other people proved futile and consequently the idea had to be given up.

It is desirable that the good characteristics of intelligence, courage and endurance which the people of this caste are endowed with are channelised for some better purpose of social good. Their increasing criminal tendencies require to be checked and their social consciousness needs to be awakened so as to harness their better qualities to the benefit of the community as a whole.

CHAPTER III

FAMINES

The food problem occupies today the centre of the stage in any discussion which pertains to the economic well-being of any region. It is being increasingly recognised that unless a proper solution is found for it, no plan can ever be worked with success.

Mehsana district as a whole is predominantly an agricultural region and a considerable part of its population depends upon agriculture and auxiliary occupations. The average rainfall is about 20 inches only. Being situated in the interior northern part of Bombay State the strength of north-west monsoon is the weakest over this area. Moreover being a flat land without any noticeable range of hills except in some parts of the eastern border of Kheralu taluka there is nothing to hinder the monsoon winds which pass over the district sprinkling little water over the region. Thus scarcity of water, aided by absence of any type of irrigation leads often to failure of crops resulting in scarcity or famine.

The table below clearly shows that in Mehsana district every fourth year is a famine year and every third a scarcity year. The result is that as against every two years of scarcity and famines there

TABLE I

YEARS OF FAMINE AND SCARCITY IN MEHSANA DISTRICT

Famine Years	Scarcity Years	Satisfactory Years
1899	1900	1905
1901	1902	1906
1904	1903	1907
1911	1910	1908
1915	1912 Lean year	1909
1916	1914	1913
1923	1920 Lean year	1916
1925	1922	1917
1936	1924	1919
1939	1926	1921
1948	1929	1926
1951	1931	1927
	1932	1933
	1930	1934
12	1935	1937
	1938	1941
	1940 Lean Year	1942
	1946	1943
	1947	1944
	1949	1945
	1952	1950
	21	21

Source : Office of the District Rural Development Board, Mehsana.

is hardly one year which can be called satisfactory. This is enough to show that the district as a whole is a chronic famine area.

During the last 54 years, 12 years were famine years and 21 scarcity years. Out of 21 scarcity years three years were lean years. Thus nearly two-thirds of the whole period is one of scarcities and famines.

Certain regions in the district are more liable to famine and scarcity than others. If the rainfall figures are examined it is evident that in talukas like Chanasma, Harij, Sami, Radhanpur and Santalpur the rainfall is low, even in normal years. These areas can be considered as very liable to famine. The whole of Chanasma, Harij, Sami, Radhanpur and Santalpur talukas, the north-western part of Patan and Santalpur talukas, the southern part of Kalol and Kadi talukas known as Khakharia Tappa, and western part of Mehsana taluka can be grouped together as areas more liable to famine, while the remaining talukas like Vijapur, Kheralu, Visnagar, parts of Patan, Sidhpur, Kadi and Kalol can be grouped as areas less liable to famine.

Considering the population and area of the above parts, it can be safely said that out of a total area of 4,126 sq. miles with a total population of 14,71,662 souls in this district, an area of 2,721 sq. miles with a population of 6,10,382 souls is liable to famines. This means that nearly 61% of the total area and 41% of the total population is very liable to famine and acutely affected in times of less rainfall.

The occupational pattern of the district reveals that more than 60% of its population is engaged in agriculture, and only 40% in non-agricultural pursuits. There are no large cities in the district and, barring half a dozen cotton mills, there are no big industries. Cottage industries also are not very highly developed. Thus the region is very poor from the point of view of economic activity. Because of such low level of economic activity, the impact of famine or scarcity in any year is experienced more acutely in the region. The middle and backward classes such as Thakardas, Rabaris, Kolis, Harijans etc. are always hard hit.

It is not possible here to trace in detail the history of famines and the actions taken by Government on each occasion. But to obtain a rough idea as to the nature of scarcity conditions in the region and to analyse the economic aspects of expenditure incurred under the famine code it will be worthwhile to go into details of any one of the years declared as famine or scarcity year. The scarcity year of 1951-52 is selected for the purpose.

Scarcity Year of 1951-52

The main cause of scarcity in 1951-52 was the failure of rainfall at the advanced stage of crops. Radhanpur, Santalpur, Sami, some part of Harij, northern part of Patan, Khakharia Tappa of Kadi, Kalol

and Katosan area of Mehsana taluka were affected to a great extent. The crop was below 4 annas in all the affected villages. Nearly 393 villages with a population of 3,10,715 were affected. If the rains had come even towards the end, it might have changed the whole aspect. But they did not, and scarcity conditions were declared.

Under the Bombay Famine Code, relief measures like the starting of certain works like digging of wells, tanks building, giving doles and sanctioning of taccavi loans to the needy agriculturist were started. The cost of relief given directly by Government was as follows :—

	Rs.	as.	ps.
Pay of establishment	23,230	8	3
Relief Works	890,148	2	6
Gratuitous relief	18,123	9	5
Water supply	6,038	8	3
Movement of grass	40,507	8	0
Cost of hay supplied	127,539	7	10
Free distribution of grass	835	5	6
Miscellaneous	1,931	4	0
Total	1,108,254	5	9

In addition to this a sum of Rs. 2,000 was allotted to this district by the Director of Famine Relief, Ahmedabad and Rs. 11,880 were given by private charities.

In accordance with the provisions of the Act, full suspension of land revenue was granted to 818 villages, the crop anna valuation of which was calculated as less than 4 annas. Suspension of land revenue to the extent of 50% was also granted to villages, the anna valuation of which was more than that of four annas but below six annas. The recovery of authorised past arrears was suspended in 938 villages. The total land revenue amount which was suspended came to Rs. 42,10,557. Taccavi loans to the extent of Rs. 11,79,650 were also extended. A good amount was also spent by the public health department in the form of medicines etc. Thus the total cost of scarcity can include direct expenditure by Government in the form of relief works, doles donation by private charities, the amount of land revenue suspended and the cost of special services rendered by Government and various institutions.

Knowing the frequency of famine and scarcity years in the district the question that arises is whether the measures taken under the Famine Code help in mitigation of the distress of famine permanently or whether the measures serve as temporary relief works only. The practical experience everywhere has been that the works started are carried out in a slipshod manner and as soon as conditions improve, they are given up. Moreover the nature of works taken up is hardly from the point of view of development of the regions. As for example, digging of tanks and building of roads are done on the basis of area and villages affected rather than from the point of view of economic priority and development of the region. The object is immédiate local relief, and hardly any thought is given to long term betterment of the region. One outstanding example in the matter is that of allowing the use of the Babul tree for making charcoal in Radhanpur taluka where the necessity of afforestation to prevent the advancement of the Runn is of greatest necessity. On the one hand, plantation of Babul is advocated to check the encroachment of Runn while on the other hand, trees are allowed to be cut down for making charcoal. It is found that a large part of famine expenditure under the Famine Code does not help the famine areas to free themselves permanently from such conditions in any way. As a matter of fact, the operations under the Famine Code do not serve as permanent remedies, but as palliatives only. In Mehsana district alone, during the last 54 years, 33 cases of famine or scarcity conditions occured, and the Government must have spent crores of rupees in direct as well as indirect ways. The point that is being stressed is that no famine expenditure, however necessary it may be under the Famine Code, can take us nearer to the final solution of the problem.

It is also questionable whether uniform state-wide schemes like well irrigation, etc., can be of benefit to such areas to the extent desired. This is so because expenditure on a big scale cannot be incurred in the backward area unless a special case is made for it. Moreover, it is from these areas that prescribed contributions under the scheme do not come forth on account of the economic inability of the beneficiaries concerned with the result that schemes do not progress much as they do elsewhere. Famine areas call for special consideration in such schemes. They also demand well thought out and planned special schemes, with the emphasis more on getting the work done for the permanent benefit of the region rather than anything else.

The community development projects are no doubt an advance on our previous experience. Much may be hopefully expected of them in Vijapur and Kalol taluka areas of the Mehsana district. The criterion for any area for the community development project is that the tract must have either an assured rainfall or irrigation

facilities. If this is so, it would be too much to expect the community projects to extend, even in course of time, to the famine tract of the district because there is neither assured rainfall nor irrigation facilities. This may result in an unbalanced development of different parts in the same region. It is therefore necessary to see that such parts which are financially a liability year in and year out on the Government are not neglected but are also attended to and a special plan for the development of such regions put into operation.

To evolve a permanent solution of the problem of famines and scarcity, and to assure the region a sort of steady economic development, it is essential to examine the various aspects of its economy in detail. From this point of view different problems will be examined in the chapters that follow.

CHAPTER IV

THE SOIL PROBLEM

SOIL OF THE DISTRICT

The soil of Mehsana district can be broadly divided into three main classes :

(1) *Goradu* or sandy loam,

(2) Sandy, with salty patches and

(3) Medium black soils.

The soils in Radhanpur division are sandy to sandy loams with salty patches here and there. The soils of the southern parts of Kadi, Kalol and Chanasma taluka are medium black or *kyari*, *i.e.* paddy soils. But the area under *kyari* soils is not large. The major portion of the Kheralu taluka is hilly and has sandy soils, overlying the rocky strata, which are not met within the reasonable depths in the remaining area. In Harij, Sami, Santalpur and Radhanpur talukas, the soil is sandy loam to sandy with high saline contents. The detailed analysis of the soils of some of the important villages in Mehsana district is given in appendix No. 5.

On the whole, the soil of the district is good and well suited to the particular crops sown therein. However, there are certain problems which require to be studied from the point of view of safeguarding and increasing the welfare of the community. The important aspects that require emphasis are : (1) Salt land reclamation in talukas of Harij, Sami, Santalpur and Radhanpur, (2) Soil erosion on river banks and (3) Encroachment of the Runn of Kutch on the western side of the district.

SALT LAND RECLAMATION

The whole of the saltish tract on the western side suffers from various defects. Firstly, there is considerable accumulation of salts, chiefly sodium chloride and sodium sulphate, principally in the sub-soil at the depth of 2′ to 3′ and again 5′ to 7′. Secondly, there is an impervious crust through which a great deal of the little rainfall received is unable to penetrate and in which seed germination is very poor. Thirdly, there is a marked tendency towards short rainfall.

The attention of the Baroda Government was drawn to this problem of salt reclamation and improvment of the land in 1939-40. A salt reclamation and dry farming station was started at Harij, a place considered typical in the tract. The establishment of this farm formed one of the proposals of a special committee appointed by the former

Baroda State Government for planning the improvement of economic conditions of Harij region with its huge expanse of saline tracts. The Committee recommended "ample surface watering, effective system of open drainage either leading to low level natural outlet or an erected pump for collecting the saline contents washed out of the soil finally to be pumped out." Other alternative measures suggested were: (1) soaking with fresh water, (2) cultivation or growth of plants which can tolerate salinity and (3) deeper cultivation experiments and certain dry farming practices.

Harij Dry Farming Station

Harij Dry Farming Station is situated a mile and a half from Harij railway station. An area of 352 acres was selected for the farm. Out of this 59 acres are under cultivation and experimentation work. The central idea behind the experiments is to investigate how far it is possible to reduce the salinity by deep ploughing and washing the salts into open drains.

The methods being worked out are likely to be useful for similar soils all over North Gujerat. But popularisation of the methods followed and the technique of dry farming as is found practicable here, is of great importance. But successful operation on an experimental farm only is not enough. It is desirable that the cultivators come to know more and more about the experiments carried out at the farm and put into practice the latest methods. Better publicity of the farm experiments and practical demonstrations to the cultivators are very essential.

Soil Erosion

One of the most important problems regarding soils in Mehsana district is the continuous loss of fertile lands due to soil erosion. The process of wind and water erosion in the district has been in operation for a number of years and has affected the land very adversely. The problem of soil erosion at present has reached such an acute stage that a survey of soil erosion—its extent and degree—is absolutely essential. In Mehsana district both wind and water erosion are visible.

Erosion due to Water

Soil erosion due to water is apparent on the river banks of almost all the rivers of Mehsana district, more so in the case of the Sabarmati river.

In the absence of exhaustive data about land surveys over a number of years, it is difficult to say how much land has been lost due to erosion. In spite of this, the seriousness of the problem can be gauged if the present conditions are studied critically. The *Kotars* formed on river banks extend upto 30 to 40 feet in length all along the course of the river. Some *Kotars* are advancing deeper and deeper into the fertile lands every year. An experiment carried out during the Baroda regime revealed that uncontrolled *Kotars* were extending at the rate of 3 to 5 feet every year into cultivable lands. At some places the extension was at a greater pace. As the first six monthly report of the Community Project in the district states, the soil erosion problem of this nature is acute in nearly 25,000 acres on the eastern side of the project area.

The gravity of the problem is revealed when the shifting of population and village sites are examined. All along the banks of the Sabarmati river, one comes across a number of villages having the same name, with the prefix old and new. This is an indication of shifting village sites. The formation of *Nava* Kot near *Juna* Kot and extension of Pedhamli, Hirpura, Ganeshpura etc. on newer sites away from the river side seem to be the results of soil erosion on river banks. Most of these villages have shifted to the interior about a mile from the river. Thus the soil erosion due to water has affected a large area and a large number of people on the river banks of Mehsana district.

With the view to find out ways and means of tackling the problem and to impress the seriousness of the situation on the cultivators, the Baroda Government had appointed a special committee to undertake operations for soil conservation. Hirpura, a typical place in the whole area bordering the Sabarmati river in Mehsana district was selected for experiments and operations.

In Hirpura area, it was decided to contour terrace some 1,600 bighas of land then cultivated and falling away to the river, to take over or acquire all areas at the heads of *Kotars*, major or minor, and to start operations to prevent any further advance of *Kotars* into open country. There was, however, much opposition from the Hirpura village in the beginning and apart from the contour bunding of some 200 bighas, and work at the heads of the *Kotars* much effective progress was not made in the first year. More systematic work was done during the years 1942-44.

The Runn of Kutch

It is the common belief of a large section of the people that the Kutch desert is advancing into the fertile territory of North Gujerat and is slowly and steadily eating away the territory on the western border of Mehsana district. Not only this, but it is also believed that

the evil effects of these gradual encroachments are experienced even in the interior parts of the district. It is desirable that the problem be investigated in full detail at the earliest opportunity and all preventive as well as reclamatory steps be taken at the earliest stage.

Very little investigation work seems to have been done regarding the survey of the deserts of India. Opinion seems to be divided on the factual aspect of desert advance and it is suggested that the problem should be examined in a scientific and unbiased way. It is gratifying to note here that a committee has been appointed to report on the question by the Gujerat University under the chairmanship of Dr. Ramnathan. It has done some preliminary work and is awaiting further opportunity to carry out exhaustive investigation.

However, it will not be out of place here to discuss the problem in a little more detail with whatever data are available. The discussion that follows is based on the inspection notes by a Government officer who had undertaken the investigation and submitted a report to the Government of Bombay, and on field investigation carried out during our survey. It reveals the nature of the problem and the type of situation that is in existence.

The Advancement of the Runn of Kutch

The advance of the Runn of Kutch means the spread of conditions prevailing in the Runn of Kutch to neighbouring areas. It is therefore necessary to know the actual constitution of the Runn of Kutch and the conditions prevailing there.

Unlike other deserts of the world the Runn of Kutch is not a "sea of shifting sand" as is commonly supposed. It is composed of saline mud (with salt incrustation in the greater Runn) deposited in layers of a varying thickness by river action of Luni, Banas, Saraswati and Rupen all of which disappear in the desert. The salt incrustation met with in the greater Runn is at some places 3″ thick and forms a plaster like *pan* over the wet mud. The Kutch Runn is absolutely a plain area without sand and big dunes.

There are some cultivable lands in the small Runn. They are elevated portions where, along with clay, is found a fair portion of silt with the result that cohesive power of clay is reduced and the soil remains loose. This kind of loose soil is called "*Khepat*." It is light and loose and is liable to be blown away by winds.

During the monsoon, the Kutch desert becomes a sea of water. It is felt that this water communicates with the Arabian Sea that represents the inexhaustible source of salinity in the areas round about.

Extension of the Runn of Kutch is brought about in a very queer way. The part played by wind in bringing about the advancement of the Runn appears to be a little exaggerated because the correct phenomenon is little understood. It has been observed in the foregoing paragraphs that the constitution of the Runn of Kutch is such that there is little sand that wind can blow off. The presence of this type of Runn discounts any greater fear of wind blown salinity. Even along the desert border slightly raised portions are left out and the areas behind them have been affected. If wind was the main factor spreading salinity such raised portions should be the first to arrest windborne salt and increase in height year after year and protect the areas behind them. But this is not the case.

However, as stated before, certain areas in little Runn contain *Khepat* which is very light. This is blown by wind and deposited on fertile lands. The range of blast does not appear to be more than two miles from the desert border at any place. It is also observed that beyond half a mile from a desert border the quantity of *Khepat* transported by wind is so little that adverse effects on agricultural land are not noticed. Not a single field beyond half a mile of desert border has been abandoned on account of *Khepat* deposition.

Even the areas within half mile of the desert which is said to develop salinity on account of salt dust or *Khepat* needs some scientific examination before it can be accepted as a fact. If the *Khepat* blow is an usual annual feature, the rate of advancement along the present Runn should also be uniform. But this is not so. On the contrary, it is believed that *Khepat* contains more of "*Surokhar*" (KNO_3) than of salt ($NaCl$). If this is the case it should serve as a good nitrate fertiliser. But in the absence of a scientific analysis, no definite conclusion can be arrived at.

The general lay of the land of the bordering countryside is towards desert. The rivers and other water courses therefore flow and empty themselves into the Runn of Kutch. The Runn itself has northward slope and hence all the water collects in the greater Runn. During high tides in the Arabian Sea, tidal waters enter the Runn through the gulf of Kutch and add to the level of water. High velocity winds too are known to raise temporarily the level of water in the greater Runn.

When the water level in the greater Runn rises, the low-lying areas get flooded with saline waters. Fields, though touching the desert borders slightly elevated, have escaped inundation and are under

cultivation for several years. Suigam and Agara provide instances of the same.

One of the important facts is the passage of salinity by percolation and then its upward rise during the process of evaporation. The area adjoining the Runn as well as that engulfed by it and where the saline water stagnates has a tendency to develop salinity by way of percolation. The rate of development of salinity by way of percolation depends upon the height of the fields above its surroundings, the nature of soil, the period for which saline water stagnates etc.

Owing to the existence of saline layers within two to four feet from the surface, salinity rises up towards the surface in summer. It does not get back into the lower level because of low and scanty rainfall. This seems to be the main cause of the spread of salinity in the south *viz.* the areas of Sami, Santalpur, Radhanpur. Harij, Chanasma and western side of the Patan taluka.

Again, the type of soil prevalent in these talukas is sandy clay to clayey with defective subsoil drainage. Percolation is less and therefore, surface run-off is high. As a result of this the salinity that has been rising to the surface does not leach out in scanty rainfall. Such soil appears very much like *ushar* soils of U.P. and *kallar* soils of the Punjab.

Where there are natural depressions, the surface run-off carrying with it saline clay collects and in course of time spreads salinity by flooding saline water over adjacent fields. The depression becomes shallower and shallower with annual deposition of clay with the result that saline water spreads over increasing areas year after year. The devastation caused by such saline focil is not in any way less, if not more, than that wrought by the desert. Instances are provided by Babara, Sidhada and Korda of Santalpur taluka.

From what has been said above, it follows that the rate of advancement is governed by :—

(1) The lay of land *i.e.* topography bordering on the Runn.

(2) Water level in the Runn.

(3) Velocity of wind.

(4) Amount of intensity of precipitation.

All these factors are interdependent and are closely inter-related.

RATE OF ADVANCEMENT

In the absence of exhaustive data about land survey etc. it is difficult, well-nigh impossible, to find out the rate of advance. However, the popular version about extension is as follows :—

Asara	2 miles	in	40	years	*i.e.*	260′	per	annum
Mavarsari	1 mile	in	10	”	”	530′	”	
Jhajam	300 miles	in	50	”	”	6′	”	
Eval	300 ”	in	50	”	”	6′	”	

The list can be multiplied but only a few instances have been given.

A comparison of 1/4″ survey sheet (1887) with the present position of the desert boundary as ascertained during field investigation gives the following rate of extension :—

Asara	 140	per annum
Mavarsari	.. .. .. 36′	,,
Jhajam	 88	,,
Chanarka	.. .. .. 140′	,,
Eval	.. .. .. 120′	,,
Jakhotra	.. .. .. 68′	,,

EFFECTS OF DESERT CREEP

The evil effects of the creep of desert are unfortunately not realised by the local people because its incipient manifestations have not been correctly interpreted by them. Moreover *Bajri* (*pennisetum typhodium*), the main crop of the region is such a non-exacting and non-fastidious cereal that minor changes in the soil are not reflected in its yields. But one indication that in some places fields are kept fallow for one to two years after three years cropping is a warning that the soil is losing its fertility. The gradual decline of yields in certain talukas like Sidhpur and Mehsana which will be examined in the chapter on Land Utilisation may also be to some extent the result

of the changing soil conditions over and above the decline in rainfall etc. To ascertain the validity of the argument of deterioration in soil due to desert, it will be worthwhile to collect yield figures of the last fifty years of Sami, Santalpur, Radhanpur and Harij talukas, and to have periodical chemical and mechanical analysis of the soils of these talukas. The predominance of *Bajri* itself is an indication of low fertility of the land. It may be noted here that the desert areas of Sind and Rajputana also produce *Bajri*.

As indicated in the foregoing paragraph, it should be realised that the adverse effects of the extension of the Kutch desert are felt far beyond the present desert boundary. It can be said that the affected zones extend as far as Patan and the whole of North Gujerat region can be called a vulnerable zone.

Need for Investigation

The above discussion on the problem of advancement of the Runn clearly brings out the necessity of more exhaustive investigation on the part of Government. The investigation sponsored by the Gujerat University under the chairmanship of Dr. Ramnathan would be, no doubt, of great help if the work is fully carried out and not delayed due to financial handicaps. But at the same time it is incumbent upon the State as well as Central Government to see that the question is examined in detail and necessary action taken as early as possible.

The Problem of Soil Conservation

Measures for the conservation of soil are to be correlated with the system of land utilisation, the rotation and pattern of crops, the use of manures and fertilisers, and availability of water resources etc. The various factors are discussed in different chapters and need not be dealt with here. But one fact is to be noted here that, except for keeping the land fallow for some time and using local manures in few cases, the cultivators in the district have no idea about the importance of soil conservation.

It can be said that in the district, depletion and recuperation of soil have reached such a level that it has affected productivity very adversely. This is the time when an intensive soil survey of the district, with its correlation to water availability, crop pattern and manuring systems should be taken up, and wide propaganda made thereafter for improvement and conservation of the soil.

CHAPTER V

LAND UTILISATION

In any programme of economic planning the utilisation of land resources obviously must form a major item, especially so in a district like Mehsana where more than half of the population lives directly on land. A rapidly increasing population, a definitely insufficient level of nutrition to both men and livestock and poverty, partly caused by the low acreage per capita, require that utmost care should be taken of the land resources and that they should be conserved against loss and deterioration and maintained at a level of optimum productivity. A study of land utilisation, along with other problems like crop patterns, yields etc. must therefore be of great importance.

As the reconstitution of the district has taken place after the merger and new territories have been added as well as some parts from the old region removed, it is difficult to get comparable data of land utilisation for a number of years. The latest figures which can be fully relied upon are for 1951-52.

Out of the total area of 27,67,000 acres 20,54,403 acres are cultivated in the district. The proportion of cultivated to uncultivated area comes to 74.2% and 25.8% which is not very much different from that of the Gujerat region as a whole, 74.4% and 25.6%. The details of cultivated and uncultivated land in each taluka are as follows:—

TABLE I

PROPORTION OF CULTIVATED AND UNCULTIVATED AREA IN MEHSANA DISTRICT: 1951-52

District or Taluka	Cultivated Area %	Uncultivated Area %	Total Area in '000 Acres
Mehsana	74.2	25.8	2,767
Talukas :			
Mehsana	84.5	15.5	194
Visnagar	87.3	12.7	110
Kheralu	77.9	22.1	220
Patan	79.7	20.3	257
Chanasma	92.1	7.9	219
Sidhpur	72.7	27.3	166
Harij	83.6	16.4	100
Radhanpur	62.8	37.2	138
Santalpur	60.6	39.4	400
Sami	59.6	40.4	350
Kadi	76.7	23.3	206
Kalol	76.3	23.7	173
Vijapur	78.2	21.8	228

Source: Agricultural Officer, Mehsana.

The talukawise figures reveal that conditions in talukas like Harij, Kalol, Visnagar, and Vijapur are fairly good. In the case of Sami, Santalpur and Radhanpur the percentage of cultivated area is rather low, perhaps because of high salinity in the soil due to the proximity of the Runn of Kutch.

To know whether the land under cultivation is systematically exploited or not, and to know how much of the uncultivated land can be brought under the plough, it is necessary to examine the above figures in detail.

CULTIVATED LAND

Current Fallows

Appendix Nos. 6 & 7 show the details of land under cultivation in various talukas and the district as a whole. The average area left as current fallows in the year 1951-52 was 2,77,313 acres out of the total cultivated area of 20,54,403 acres indicating that for every 100 acres of cultivated area there are nearly 13 acres which remain idle every year. The average for the whole district is distorted to a very large extent, because the area of current fallow in Santalpur taluka was high to the level of 56%. The reason for this high percentage is that there was shortage of rain during the year and no wheat cultivation was carried out because of the lack of moisture in the soil. Thus the area which remained unsown, seems to have been included under current fallows consequently increasing its percentage to the cultivated area. But apart from this particular reason, it is gathered during the field investigation that because of the high saline contents of the soil due to the vicinity of the Runn of Kutch, it is the general practice of cultivators in these regions to keep the land fallow more often than otherwise necessary.

On the whole, excluding these talukas, the extent of current fallows is not very high. On an average, the current fallows in other talukas come to 4 to 8% of the total cultivated area. The main purpose of keeping the lands fallow is to enable them to regain their fertility exhausted by repeated raising of crops. This course is also partly necessitated on account of want of good manures. A fact to be noted here is that in the district, 97% of the area produces dry crops. The lands on which dry crops are grown remain idle for the greater part of the year during which they partly regain their fertility. Repeated croppings consecutively for many years result in slow but considerable exhaustion of the fertility of the soil and hence the prevalence of the practice of fallows in rotation to this extent is quite obviously indicated for the district.

Double Cropped Area

The extent of area cropped more than once forms a very small proportion to the total. In talukas like Sami, Santalpur, Radhanpur, Harij and Chanasma, a second crop is hardly possible. Even in Patan, the area under double cropping is very small. It is fairly well above 10% in Vijapur, Sidhpur and Visnagar talukas only. This is possibly because of the water facilities there, due to well irrigation. With a meagre rainfall all over the district, and the scanty irrigation facilities, it is difficult to make any appreciable progress in intensive farming through multiple cropping.

UNCULTIVATED LAND

In the uncultivated land, the area of forests forms a very small part, *viz.* 2.9% only. Barren and uncultivable waste comes to 6.7% of the total uncultivated area. Nearly 58% of the uncultivated land goes for permanent pastures, grazing land, trees etc. Cultivable waste forms 1,45,962 acres, being 20% of the uncultivated area.

Examining the area of cultivable waste taluka-wise, Kheralu taluka has the least area, while Chanasma taluka has 12,332 acres. Visnagar and Radhanpur talukas also have fairly large areas of cultivable land. The area included in permanent pastures and grazing can also be considered as cultivable waste. Thus, in Mehsana district there is great possibility of bringing new land under the plough. It is to be noted here with regret that in spite of this scope, there is not a single scheme for reclamation of land in operation at present in the district. The experiments carried on at the Harij farm for eradication of salt contents and reclamation of lands are still in the initial stages and are not finalised in a way to be put into practice on a large scale.

CROPS

In order to obtain a fuller idea of the economic use of land, the study of land utilisation should be followed with reference to the allocation of land to the cultivation of various crops.

The table below goes to reveal that Mehsana is mainly a food crop area and its crop pattern has not changed substantially during the last 10 years. Comparing it with other districts of Gujerat it has the highest area, *viz.* 85% under food crops. No other district in Gujerat has so much land devoted to food crops. Area under non-food crops is also the lowest and has not increased in proportion.

TABLE II

AREA IN PERCENTAGE UNDER FOOD AND NON-FOOD CROPS IN MEHSANA AND OTHER DISTRICTS OF GUJERAT

Area	Food Crops	Non-Food Crops
Mehsana 1940†	81	19
1949††	85	15
Ahmedabad	60	40
Kaira	69	31
Broach	57	43
Panch Mahals	79	21
Surat	55	45
Amreli	74	26
Baroda	53	47
Sabarkantha	67	33
Banaskantha	72	28
Average Gujerat	67	33
Average Bombay	74	26

† Compiled from Statistical Abstracts, Baroda State.

†† Season and Crop Report, Bombay State, 1949.

(Food crops include condiments and spices, fruits and vegetables, sugarcane and miscellaneous food crops besides food grains)

Details of the Crop Pattern

Appendix No. 7, showing details of crops during the year 1951-52 gives a clear picture of the crop pattern. Among cereals which occupy 67% land of the total cultivated area, *Bajri* and *Jowar* are the main crops. Paddy cultivation is almost negligible and wheat occupies only 5% of the area occupied by cereals. The total land under pulses comes to 13% of the total land under crops, while vegetable has a very small share of 2% only. Oilseeds and non-food crops have together 22% of the cultivated area. Cotton, Castor seeds and *sarsav* are the major crops among these groups.

One fact which stands out prominentlv from the above data is that a major part of the cultivated area is under inferior and coarse grains. Such crops do not fetch high economic returns. The lower type of crops shows the backward nature of agricultural production and reveals an under-developed state of agrarian economy.

Food Crops

Bajri and *Jowar* are the principal food crops produced in the district. *Jowar* is considered a useful crop because it serves not only as food for human beings but also serves as fodder for the livestock. *Sundhia* is a common *jowar* variety and is probably the best. The various characteristics like the exceptionally high yields, thin and leafy stalks and short period maturity (60 days) have made it indispensable when famine is threatening the region. Moreover, there is less wastage in feeding *Sundhias* than any other *jowar* fodder to cattle because it is highly nutritious and palatable. *Bajri* is another important kharif crop of the district, suitable to its '*goradu*' and sandy soil, its dry climate and light rains. In many of the areas *mag*, *math* or some other crops are sprinkled together with *bajri*. In a normal season mixed crops are safer and more remunerative than *bajri* alone. Efforts are being made to introduce N. 207 variety of *bajri* on an extensive scale. The third important crop is that of wheat. Wheat is usually sown in areas where water facilities are fairly good. There are various types of wheat like *Vajia*, *Lalkatha* and *Chandushi* grown in the district. At present there is an increasing tendency of growing *Pusa 4*, *Pusa 52* and *Niphad* type of wheat. *Niphad* is an irrigated variety which yields more grain *i.e.* 1,200 lbs. per acre. The quality of grain is better than that of *Pusa* and it responds well to manuring. Efforts have been made to introduce *Kanphad* type of wheat also. With reference to vegetables, it should be noted that special schemes for increasing the cultivation of potatoes and sweet potatoes are in operation with good results.

Non-Food Crops

Among the non-food crops the most important are cotton, castor-seeds, *Sarsav*, Cumin, *Variali* and *Isabgul*. Formerly the district was noted for its production of opium also. Cotton is grown to a larger extent in talukas like Kadi, Kalol, Chanasma, Sami and Mehsana. There are different varieties of cotton grown in the district. *Kalyan 8* is one of the important types prevalent in the region. Castor seeds are grown in most of the talukas. Cumin and *variali* are the important products of the district and command a good market not only in the country but outside as well. *Isabgul* is another item which is being given great importance in recent times. It is a sort of husk (*psyllium*) which has a high medical value and is produced only in this district, giving it all the benefits of monopolistic bargaining. Production of *Isabgul* needs to be encouraged from this point of view. The cultivation of Virginia flue-cured cigarette tobacco in Vijapur needs mention here. Experience gained in the cultivation of this tobacco shows that it has a great future in this area and the expansion is likely to be of great economic value.

YIELDS

Figures in Appendix No. 8 show average yields per acre of various crops in Mehsana district. A notable feature is higher yields of wheat *viz.* 717 lbs. per acre, which is twice the average yield of the crop in Bombay State as a whole. But much advantage is not derived from this high yield because the area under wheat is very small. The high yield of wheat seems to be probably due to the availability of water supply in some regions and the type of soil. Extensive cultivation of wheat with this yield for the whole district is a very doubtful proposition. The average yield of *jowar* is only 140 lbs. which is very poor compared to 236 lbs. in Gujerat and 423 lbs. in Bombay State as a whole. The average yield of *bajri* which is 259 lbs. compares favourably with that of Bombay State, although it is much lower compared to 337 lbs. in Gujerat. The two major crops of the district *bajri* and *jowar* thus give poor yields. The average yield of cereals and millets together is 241 lbs. in Mehsana whereas it is 426 lbs. in Gujerat and 383 lbs. in Bombay State as a whole. The yields are poor in respect of pulses also.

Among the non-food crops, the most important is cotton and its yield compares favourably with that of the Bombay State and much more so with that of Gujerat. Cotton yields 82 lbs. of lint per acre in Mehsana, 123 lbs. of lint in Gujerat and 93 lbs. of lint in Bombay State as a whole.

In the absence of statistics over a number of years it is difficult to find out the tendency of yields for the whole of the district. However, some figures are available in case of *jowar*, *bajri*, *tuver*, wheat and oilseeds for Sidhpur taluka and it reveals that the tendency is towards a gradual decrease. The following table reveals the fact :—

TABLE III

DECENNIAL AVERAGE OF CROP YIELDS PER BIGHA IN SIDHPUR TALUKA: 1920-40

(IN MAUNDS)

Year		Wheat	*Bajri*	*Jowar*	Pulses	Oilseeds
1920-30	..	14.2	10.9	14.1	9.0	8.2
1930-40	..	14.1	8.6	8.1	5.0	5.4

Compiled from "Adarsh Patrak", Sidhpur Taluka.

It is evident from the above table that during the twenty years from 1920 to 1940 the tendency of yield is towards a gradual decrease. This contention is further proved when the figures of average yields for Mehsana taluka for the years 1940 to 1945 are examined.

TABLE IV

AVERAGE YIELDS PER BIGHA IN MEHSANA TALUKA

(IN MAUNDS)

Year	Wheat	*Bajri*	*Jowar*
1940-1941	25	12	10
1941-1942	24	13	11
1942-1943	23	9	8
1943-1944	19	8	6
1944-1945	15	4	3

Source : Annual Reports of the Agricultural Department, Mehsana Prant from years 1940 to 1945.

AGRICULTURAL IMPLEMENTS

The figures of crop yields given above show that in most cases they have been low in comparison with those in other regions and are decreasing every year. To find out the causes of these low returns, it is further necessary to examine in detail the process and technique followed by the cultivators. The machinery and implements possessed and the type of manures and seeds used by the farmer etc. help us to know the actual conditions of agricultural technique. The equipment of the farmer should be adequate to meet the needs of the situation and should enable the cultivator to effectively complete agricultural operations in time to take full advantage of seasonal conditions. The ploughs, carts and other agricultural implements are in a way a measure of the farmers' capital resources.

The table below reveals that there are only 57 ploughs and 22 carts for each hundred cultivators. Since no cultivation is possible without a plough, this would mean that a number of cultivators have

to depend upon the ploughs of others. The dependence on others for ploughs hinders the efficiency of the cultivator. Same is the case with reference to carts. There is one cart for every 4 cultivators.

TABLE V

AGRICULTURAL IMPLEMENTS AND MACHINERY, MEHSANA DISTRICT: 1951

Ploughs—Wooden	1,19,607
Iron	10,496
Total	1,30,103
Ploughs per 100 cultivators	57.7
Area cultivated per plough	15.0 acres
Carts	50,327
Carts per 100 cultivators	22.3

Compiled from Census of Agricultural Machinery and Implements, Bulletin of the Bureau of Economics and Statistics, July 1952.

The Census of Livestock and Agricultural Implements 1930 revealed that the area cultivated by one plough comprised 15 acres in North Gujerat. The present census also shows that the area under one plough is the same. This amounts to saying that during the last 20 years the number of ploughs has not increased so as to reduce the average area cultivated per plough.

Looking to the type of implements used, it is found that iron ploughs form only 8% of the total number of ploughs. There are however, comparatively a large number of iron ploughs in Visnagar, Vijapur and Mehsana. The small percentage of iron ploughs to the total seems to be perhaps due to a peculiar belief that iron ploughs spoil the upper strata of soil and reduce fertility.

Considering the availability and efficiency of draught animals, which is one of the most essential of equipments for agriculture, the district is not at present in a very happy condition. In recent years there has been a positive decline in the number of draught animals. The area cultivated by a pair of bullocks has increased from 21.8 bighas in 1910 to 31.9 bighas in 1950. The number of draught animals possessed by each khatedar in the district has fallen from 1.2 in 1920 to 1.04 in 1950. The natural corollary is that a large number of khatedars are not having enough plough cattle for cultivation.

As far as other agricultural machinery is concerned the position is as follows :—

Nature of Machinery	Number
Oil Engines	1,186
Electric Pumps	28
Tractors	10

Source : Census of Agricultural Implements and Machinery.

The district has 1,186 oil engines, 28 electric pumps and 10 tractors only. Nearly half the number of tractors are found in Kalol taluka which is considerably under the influence of industrialisation. Looking to the small number of tractors and other modern machinery, it is apparent that the district has not progressed much in respect of farm mechanisation and introduction of improved technique of farming. This slow progress seems to be the outcome of small holdings, low rainfall and poor economic conditions of the farmer.

MANURES

Application of manures and fertilisers is a vital factor in increasing the yield of the soil. In Mehsana district cow-dung manure is usually in use. In talukas like Harij, Radhanpur and Sami, manure is not always used. It is, however, not the farmer's fault that the land is insufficiently manured. There are no irrigation facilities in many parts of the district and manuring in dry tracts is very often of no use. Also, it may often be that the required type of manure is very scarce and difficult to get, or too expensive having regard to the limited means of the average cultivator. It was reported in 1952 that sulphate of ammonia was in great demand for use as manure. But there was not sufficient stock in the district and some of the cultivators had to go without the fertiliser for the season.

Under the Grow More Food Campaign, Government is trying to distribute manures and fertilisers like groundnut cakes, manure mixtures, sulphate of ammonia etc. Rural and Town composts schemes are in full operation. A scheme for improving farmyard manure is also being implemented.

The following table shows the additional returns obtained in each crop by use of different types of manures during the year 1949-50 under different schemes.

TABLE VI

MANURE AND INCREASE IN YIELDS—ADDITIONAL YIELDS PER ACRE DUE TO THE USE OF MANURES

(IN MAUNDS)

Crops	Groundnut Cake	Manure Mixture	Sulphate of Ammonia
Paddy	3	3	3
Bajri	—	—	—
Jowar	2	2½	—
Wheat	3	3	3
Potatoes	8	—	—
Chino	3	—	—
Hot weather crops ..	3	—	—
Vegetables etc. ..	—	5	5
Cumin	—	—	2½
Cotton	—	—	2

Source: District Agricultural Office, Mehsana.

The utility and importance of more manure need not be stressed. There is an all round demand for all types of manures. The cultivators seem to have realised the value of manure now, and it is difficult to meet this demand for the same. The work of the village compost scheme has been taken up by the cultivators in some of the villages. Under the town compost scheme, nearly 10 out of 13 municipalities have taken up the work of composting on a smaller scale. But there are some difficulties which are to be overcome to make the scheme successful. Some municipalities have no facilities for land, carts, bullocks, etc. required for preparing compost. Some other muni-

cipalities are preparing only rain water compost as the town does not have scope for getting enough night soil. Places like Harij, Chanasma, Radhanpur etc., which have deficit water supply, have a very limited scope even for rain water composts. In the improvement of farmyard manure, the main trouble is that wherever old pits are to be improved, they have to be emptied first. These pits are emptied only in the months of April and June. Hence the work could be done only within this period. Moreover, the women folk who usually fill up and empty pits are most reluctant to adopt improved methods.

Improved Seeds

The District Agricultural Office is making efforts to distribute different varieties of improved seeds. N. 207 *Bajri* seed and N. 4 wheat were distributed. *Kanphad* wheat is also being tried. There is still a wide scope for work in this line.

A fact which should be noted here is the closure of Jagudan Farm centre as a research station. During the Baroda Government regime, Jagudan Farm was closely associated with pulses and millets improvement work and cotton improvement schemes, and it had done very good work in this field. It is to be regretted that at present the Farm has stopped its research work, and it has been turned into a school to impart practical training in agriculture. The closure of Deodard Farm which dealt with the experiments in developing draught resisting varieties, should also be noted here with regret.

Insect Pests and Plant Diseases

Gujerat Hairy Caterpillar and White ants are the main insect pests of the district. White ants generally damage all crops, with severe incidence on wheat, cotton and chillies. Caterpillars affect more crops like *bajri*, cotton and pulses. *Jowar* smut and powder mildew on cumin are common plant diseases.

On the whole, the cultivating class is not much awakened to the use of modern scientific methods to fight the diseases. They usually rely upon their age-old practices. But now-a-days a tendency to use modern scientific insecticides and fungicides is observed. Sulphur and 'Gammexene' are used in some cases. Recently in the community projects area of Vijapur, use of Paranox is also introduced, to counteract the disease called 'Kalio Charmo' known as 'alterneria.' Sprinkling of nicotine decoction as preventive against 'Aphis' is also advocated.

Locust trouble is another problem which needs to be mentioned here. In 1950-51 breeding of locusts took place in the district. The attack was serious in the villages of Patan, Sidhpur, Chanasma, Harij, Radhanpur and Sami talukas and crops like *bajri*, *jowar*, cotton and

pulses were seriously damaged. To check the invasion, 'Gammexene', kerosene etc. were used, but because of the lack of co-operation from the cultivators it was not possible to control the invasion in time. The attitude of the public in general and cultivators in particular, towards destroying locusts is not encouraging. In many cases, it is reported that cultivators actually opposed the measures taken by the agricultural department to prevent the attack of locusts. This attitude requires to be changed by proper understanding and instructions.

Agricultural Instruction and Propaganda

Looking to the backward nature of the agricultural economy of the district, instruction and propaganda for the betterment of agriculture are absolutely essential. In the post-merger period, the district being new for the Bombay State, no agricultural shows were held, nor were demonstration centres opened. It was only in 1949-50 that eleven demonstration centres, one for each taluka, were opened. Trials of improved seed, manures etc. are undertaken by the centres and practical demonstration of new improvements are given to cultivators. More demonstration centres and meetings, explaining the improvement in various aspects of agriculture, are desirable.

The centre at Jagudan helps in educating the young agriculturists. One year courses and a short course are conducted. The candidates that return to their villages from year to year, after training help to improve the standard of cultivation in the neighbourhood. It is to be regretted that the Deodard Farm, which was training the backward castes like Thakardas in agriculture has stopped functioning now.

CHAPTER VI

LAND PROBLEM

Among the important factors which affect rural living standard is the agrarian structure. The term is used to mean the institutional framework under which agricultural production is carried out. It refers to a number of aspects of economic life of the rural community besides the system under which the land is owned, the way in which the land is distributed, and the pattern of the size of holdings that prevail among the rural community.

AGRARIAN CLASS STRUCTURE

On analysing the population engaged in agriculture in Mehsana district, the following pattern emerges.

TABLE I

AGRARIAN CLASS STRUCTURE IN MEHSANA : 1951

1.	Owner cultivators	77.2
2.	Tenant cultivator s	7.3
3.	Agricultural labourers	9.3
4.	Non-cultivating landlords and rent receivers	6.2

Source : Census Handbook, 1951.

The majority of the persons in agricultural occupation fall into the category of owner cultivators. Tenant cultivators, agricultural labourers and rent receivers, all form a small proportion to the total. This means that the progress achieved in peasant proprietorship is fairly good. The small number of tenant cultivators and agricultural labourers is also an indication of the same fact.

But this fact of peasant proprietorship should be viewed in relation to to the size of holdings. The diminution in size has gone to such an extent in some cases, that it has become highly uneconomic to remain in the profession. Moreover, a horde of non-farming classes are induced to try their luck on the land. Thereby, it has lowered the efficiency of cultivation and decreased the yields per acre. It has also strengthened the tendency to grow food crops of coarser variety in preference to non-food crops. As it was stated

in the Census, 1931 "the reaction of the influx on non-farming class into agriculture are seen in various ways. Standards of agricultural produce have deteriorated, where these classes have squatted on the land..... they have cheapened labour and done nothing to improve its efficiency." The decreasing tendency regarding yields has been indicated in the Chapter on Land Utilisation.

TENANCY

As a majority of the agriculturists are owner cultivators the problem of tenancy is not an outstanding one. A clear picture of the position of Mehsana district compared to other districts of Gujerat is available from the following figures :—

TABLE II

EXTENT OF TENANCY IN GUJERAT

District	Percentage of tenants to total cultivators	Percentage of land under tenancy to total land cultivated
Mehsana	36	33
Banaskantha	71	54
Sabarkantha	34	21
Amreli	34	36
Baroda	50	36
Ahmedabad	65	65
Kaira	61	57
Panch Mahals	48	38
Broach	50	43
Surat	50	39
Gujerat	52	43
Bombay State	50	42

Source : Desai and Shah, "Rural Economy of Reconstituted Gujarat"—Journal of the Gujarat Research Society, 1950-51.

The above figures are collected from the Revenue Department. They do not tally with the census enumeration because the grouping of occupational pattern in the Census is done on a different basis. For our purpose the above figures are more reliable and a few deductions may be made from them. The extent of tenancy in Mehsana is very low. In Banaskantha it is high because the *zamindari* tenures predominated before the merger. The Ahmedabad and Kaira districts have more than 60% tenants among cultivators. It is to be observed that in Mehsana district the area tilled by tenants is comparatively small.

TREND IN TENANCY

In this dynamic world of ours, it is not enough to study only the static conditions. The changes that are operating in the pattern of tenancy are also of great importance. In the absence of reliable data for the whole district, it is not easily possible to study the trend and to know whether tenancy is on an increase or is declining. But as revealed by the figures available for Harij taluka the situation is as follows :—

TABLE III

TREND IN TENANCY IN HARIJ TALUKA: 1920-1950.

	Owner Cultivator				Tenant Cultivator			
Year	No.	Index	Land cultivated in bighas	Index	No.	Index	Land cultivated in bighas	Index
1920 ..	2,999	100	1,05,864	100	386	100	20,375	100
1930 ..	2,527	90	96,100	90	483	113	37,044	181
1940 ..	2,613	90	96,151	90	459	118	37,465	183
1950 ..	2,191	73	—	—	1049	271	—	—

Source : Adarsh Patrak and Returns from Revenue Department.

It is clear from the above figures that during the last thirty years, the trend in Harij taluka is towards increase in tenancy. The number of khatedars cultivating their land through others has increased at a

greater rate while there is a positive decline in the number of self cultivating owners. Similarly the land owned by cultivators cultivating their land through others shows a greater increase than that in the area owned by cultivating owners. This indicates an important tendency that the number of persons who do not cultivate but live wholly or partly on income derived from rent is on an increase.

Categories of Tenancy

The tenancy rights of cultivators are not uniform. The tenancy rights of a protected tenant, a category created by the Tenancy Act are far greater than those of the ordinary tenants. The share-croppers technically belong to the category of labourers who with the members of their family often work in return for a small share varying from $\frac{1}{4}$ to $\frac{1}{5}$ of the gross produce. The table below gives the proportion of the various categories of cultivators in Mehsana district.

TABLE IV

PROPORTION OF THE CATEGORIES OF CULTIVATORS IN MEHSANA DISTRICT=1952 (PERCENTAGE)

	Owner Cultivator	Permanent tenant	Protected tenant	Ordinary tenant	Share cropper	Land-lord
Mehsana District	65.2	7.5	7.7	5.5	8.7	5.4
Talukas						
Vijapur ..	60.5	8.8	17.5	4.6	7.4	1.2
Mehsana ..	48.5	18.8	6.7	6.5	10.4	9.1
Visnagar ..	48.2	10.0	8.2	9.1	18.2	6.3
Kadi ..	54.8	0.2	11.3	7.4	15.3	10.5
Kalol ..	46.5	12.3	14.0	11.5	13.5	2.2
Chanasma ..	62.4	—	13.4	1.3	6.7	16.2
Kheralu ..	60.2	11.5	7.7	6.9	7.2	6.5
Sidhpur ..	90.4	2.4	3.1	1.9	0.7	1.5
Patan ..	53.6	10.3	8.8	11.1	8.5	7.7
Sami ..	57.2	7.8	1.2	11.0	20.1	2.7
Santalpur ..	24.0	25.0	8.3	6.0	19.1	17.6
Radhanpur ..	81.8	5.4	0.6	1.0	7.8	3.4
Harij	61.4	—	0.9	—	30.9	1.8

Source : Revenue Department, Mehsana District.

The predominance of the owner cultivator is quite obvious. Permanent and protected tenants form a considerable proportion in the whole of the district. The proportion of ordinary tenants is also not great except in Kalol, Patan and Sami talukas. What attracts our attention in the above table is the category of share-croppers. They form nearly 8.7% of the total cultivator class. In regions of uncertain rainfall, crop-sharing system is no doubt usually followed but in Harij the share-croppers form nearly 30% of the total. It may be noted that the system of share-cropping was not so prevalent in the past as it is now. This category of tenant has sprung up to some extent as a result of the Tenancy Act. Landlords converted some of the regular tenants into share-croppers to circumvent the provisions of the Act and to deprive tenants of their legal tenancy rights.

HOLDINGS

Linked with the problem of tenancy and land ownership is the problem of size of holdings. The economic prosperity or otherwise of the cultivating class depends upon the size of land held by him and the efficiency with which it is cultivated. It is a pointer to the extent to which the time and resources of the farmer are fully utilised. Measures to provide subsidiary occupation to the rural economy have to be co-ordinated with the size of the holdings and the nature of farming. In any scheme of regulation of land transfer and redistribution of agricultural lands with a view to creating as many economic cultivators as possible, this information is useful.

CASTE AND HOLDINGS

The study of caste in relation to agricultural land holdings is important in as much as it affects the efficiency of agricultural production. Occupational efficiency in India is very often dependent upon caste, its hereditary professional practices and its social status. The study of the composition of the cultivating class at present would therefore, be of interest.

The peasantry of the district can be divided broadly under three groups according to the level of efficiency and intelligence shown *viz.* (1) Efficient (2) Less efficient and (3) Not efficient. In the efficient group come the Kanbis, Anjana, Chaudhari and Kadva Patidars. They are all capable farmers and by far the best cultivators in the district. The second group is made up of Brahmins, Rajputs, Muslims and a variety of other classes. In general they are less efficient and lack enterprise as compared to Kanbis. The last group consists of backward communities like Thakardas, Kolis, Rabaris etc. They are illiterate and very indifferent towards cultivation. They are strong

and hardy, but are found to be careless and inactive as far as cultivation is concerned.

It will be interesting to know the proportion in which peasant proprietorship is divided in the district. A complete and accurate analysis is not possible in the absence of exhaustive data. But the following situation is seen from the analysis of Survey Settlement Reports, 1919.

TABLE V

CASTE AND HOLDINGS IN MEHSANA DISTRICT : 1919

Caste	No. of Holders	Percentage of Total
1. Kanbis	42,811	37.16
2. Brahmins	8,744	7.59
Banias	5,012	4.35
Muslims	6,168	5.35
3. Kolis and Thakardas	19,980	17.35
Rabaris	2,511	2.17
Others	29,965	26.04
Total	115,191	100.00

Compiled on the basis of Survey Settlement Reports (Revised 1914-19). It refers to nine talukas of Mehsana district only.

The above table clearly shows that nearly 37% of the holdings were in the hands of efficient cultivators like Kanbis. Only 17 % were in the hands of less efficient, while nearly 49% of the holdings were in possession of such castes which are not efficient. This distribution has got a direct relationship with the nature of agricultural production and efficiency. A greater predominance of less efficient class is a feature to be noted in the rural economy of Mehsana, and any programme for agricultural development must take cognizance of this important fact.

The relative position of the different classes seems to have changed during the last two to three decades. Analysis of such data for all the talukas of Mehsana district for so many years is not easily available

and hence we have to restrict our analysis to one taluka only. The following figures give an index of increase or decrease in the number of holdings by important castes in Sidhpur taluka from the year 1920 to 1950.

TABLE VI

INDEX OF INCREASE IN THE NUMBER OF HOLDINGS BY IMPORTANT CASTES IN SIDHPUR TALUKA

Year		Brahmin	Bania	Kanbi	Rajput Garasia	Koli Thakarda	Muslim	Others
1920	..	100	100	100	100	100	100	100
1930	..	119	106	100	86	106	100	84
1940	..	92	104	114	78	121	110	86
1950	..	89	92	118	89	126	102	79

Compiled on the basis of *Adarsh Patrak* and *Adarsh* Map, Sidhpur Taluka.

It is interesting to note from the above table that holdings in the possession of Brahmin, Bania, Rajput, etc. are decreasing, while in the case of Kanbis and Thakardas, they are increasing. This trend should be analysed with due care. As long as the number of holdings are increasing among Kanbi, it is a very happy sign, because the cultivation is in this case going into more efficient hands. But in the case of increase with Thakardas it is to be remembered that efficiency of production will be at a lower level. To counteract this effect, it is desirable that along with the increase in the possession of land with Thakardas, their efficiency of cultivation be also enhanced. The importance of Deodard Farm, which was imparting agricultural instruction to Thakardas, has thus in no way decreased at present. The government's decision to close that farm is, therefore, not a very opportune step from this point of view.

Size of Holdings

The other important fact which is revealed from the above table is that the concept of caste-superiority in matter of ownership of land seems to be decreasing. Brahmins, Banias, etc. who are not professional cultivators as such, but who were owning land are now slowly going out of the picture and making way for an easy emergence of a new class of peasant proprietors. It is a healthy sign which should be noted for its importance.

The distribution of holdings according to size in Mehsana district is as follows :—

TABLE VII

DISTRIBUTION OF HOLDINGS ACCORDING TO SIZE : 1952

	Percentage of number of holdings to total				
	Under 5 acres	5 to 25 acres	25 to 50 acres	50 to 100 acres	Over 100 acres
Mehsana District	40.7	38.6	13.6	6.8	0.3
Mehsana	26.9	61.6	8.9	2.0	3.0
Sidhpur	79.3	10.3	6.1	2.9	1.0
Kalol	31.1	41.3	26.1	1.2	0.6
Visnagar	33.6	46.4	19.3	0.4	Negl.
Kheralu	26.2	49.7	23.4	0.6	Negl.
Kadi	12.8	65.3	13.1	6.6	2.3
Sami	19.4	56.9	7.8	14.3	1.3
Patan	24.4	66.4	6.5	2.7	0.8
Vijapur	33.9	47.4	17.7	7.0	0.1
Radhanpur	19.4	53.7	19.7	4.9	Negl.
Chanasma	29.2	46.7	11.6	12.2	Negl.
Santalpur	Nil	5.2	26.3	68.4	Negl.
Harij	19.9	55.1	16 6	5.2	1.7

Source : District Agricultural Officer, Mehsana.

The above table shows that out of the total holdings, the size of nearly 78% of the holdings is below 25 acres in Mehsana district. Holdings bigger than 50 acres in size form only 7 % to the total holdings. The holders in size group 25 to 50 are about 13% of all the holders. Examining it taluka-wise, we find that the situation in Sidhpur taluka is very bad, with nearly 79% of its holdings below the

size of five acres. In Kalol and Kheralu a fairly good proportion falls into the second and third size groups. In Sami, Santalpur and Radhanpur, the size of holdings is on the whole bigger compared to that of other talukas. The situation in these talukas seems to be so because of the peculiar inferior type of soil in the region and the system of land tenure and tenancy prevalent there in the pre-merger period.

TREND IN SIZE OF HOLDINGS

After examining the present patterns in the size of holdings, it is interesting to examine the trend of holdings over a number of years. In the absence of figures for a number of years for the whole of the district, we shall have to confine ourselves to the study of one taluka only *viz.* Harij.

TABLE VIII

TREND IN SIZE OF HOLDINGS IN HARIJ TALUKA : 1920—1950

Year	Upto 5 bighas	5 to 25 bighas	25 to 100 bighas	100 to 500 bighas	Above 500 bighas	Total
1920	807	1,474	801	86	17	3,185
1930	609	1,305	882	151	18	2,965
1940	470	1,342	1,061	174	25	3,072
1947-48 ..	1,179	1,508	587	188	24	3,486

Compiled on the basis of *Adarsh Patrak* and data from Mamlatdar's Office, Harij.

The trend upto 1940 seems to have been one of decrease in number of holdings of small size and increase in the number of holdings above the size of 25 bighas. The trend seems to have been changed substantially thereafter. In 1947-48 we find that there has been a tremendous increase in holdings of size below 25 bighas, with a fall in the size of 25 to 100 and slight rise in the size above 100. Thus it is evident that the holdings of small sizes are increasing at the cost of the size of 25 to 100 bighas, while big holdings remain unaffected. The usual tendency of increase in dwarf holding, by splitting up of the top is not in operation. The transfer of land by sale or mortgage and splitting up of the holding seems to be affecting mostly the holders of 25 to 100 bighas. Holders with 100 bighas and more are increasing at a very slow speed.

ECONOMIC HOLDINGS FOR MEHSANA

The study of the size of holdings would prove itself of much significance when the size of economic holding of the district is decided. By economic holding is meant a holding which allows a man a chance of producing sufficient to support himself and his family in reasonable comfort after paying his necessary expenses. The size of economic holding will vary according to a number of factors. It would depend upon the nature of the methods for agricultural production, on whether cultivation is extensive or intensive, on the quality of soil, presence or absence of irrigation facilities, type of crop raised and so on.

Without going into the details of conceptive discussion, we will look into the practical aspect of it with reference to Mehsana district. After the merger of this territory into Bombay State, an effort was made recently in 1953 to fix up an economic holding for the district. The district was divided into two divisions according to the soil condition, irrigation facilities available, cropping methods etc. On this basis the first division included Kalol, Vijapur, Kadi, Mehsana, Visnagar, Kheralu, Sidhpur, Patan and a part of Harij taluka, while the second division included Sami, Santalpur, Radhanpur and the remaining part of Harij taluka. A detailed investigation regarding income and expenditure level and cost of living etc. was made by the district agricultural office, the details of which we need not discuss here, and the following size was fixed as economic holding for the two divisions.

TABLE IX

ECONOMIC HOLDINGS FOR MEHSANA DISTRICT

Name of Division	Entirely dry	Partly irrigated and dry
1st Division		
Kadi, Kalol, Vijapur, Sidhpur, Patan, Mehsana, Visnagar, Kheralu, part of Harij	20 acres	15 acres
2nd Division		
Sami, Santalpur, Radhanpur, part of Harij	30 to 35 acres	*Nil*

Source : District Agricultural Office, Mehsana.

Without disputing the scientific validity of this calculation, we may consider the proportion of holdings in Mehsana district, which can be considered as economic holdings. Unfortunately we are not in possession of classification according to various sizes which we would require to find out the ratio of uneconomic holdings. But on a rough

calculation, it can be stated that more than 40% of the holdings in Mehsana district are uneconomic.

A very distressing conclusion is to be arrived at on the basis of the above discussion *viz.* that nearly 40% of the landholders, possessing land below 5 acres, are more or less on a starvation level. It is sometimes argued that, the case of this category is not so bad as it seems at first sight, because more than half of these landholders have a supplementary occupation even sometimes working as seasonal labour on other people's fields. It is very difficult to accept this argument which does not seem to have been based on any scientific investigation. The scope of remunerative alternative employment in an under-developed region like Mehsana seems to be very limited. Moreover the small sized holdings in general do not demand external labour to the extent estimated. This contention can be proved from the small number of agricultural labourers in the district. Hence the supporting argument that they derive income from subsidiary occupations sounds baseless. The number of small scale and cottage industries also is not significant to indicate productive employment. The argument fails to cover the sad plight which the cultivators in these classes have to undergo.

The second class of 5 to 25 bighas is also equally large. A number of them may be having holdings which are uneconomic. These and the former class form the backbone of agricultural community in the region. It is on them that the prosperity or otherwise of the countryside depends, and the whole rural economy of the region has to be judged on the strength or weakness of these two classes. It is an appalling revelation that a little less than half the number of landholders, numbering about a lakh and odd each with their four to five dependents, are engaged in agriculture and have to depend on it for their living and who, judged by the size of their holdings, do not and cannot produce enough to maintain themselves and their families and who are therefore below the bread line.

It has to be admitted that in any plan of economic development this class is to be placed securely on its own footing either by increasing the size of their holdings or by increasing the average yield per acre and per man. This can be done in two ways : (1) The adoption of consolidation of holdings or by co-operative farming. (2) By the adoption of scientific manuring, by improving the irrigation facilities and by reclaiming the vast cultivable but yet uncultivated tracts. It may also be mentioned that cottage industries provide the peasants good subsidiary occupation which enable them to earn something in their spare time. Any effort for improvement and for economic uplift must be directed in a persistent and constructive manner to these classes who form a very great bulk of the population of the district.

CHAPTER VII

PROBLEM OF WATER SUPPLY AND IRRIGATION

One of the outstanding causes of the agricultural backwardness of Mehsana district is the scarcity of water. With its good soil in major areas, with its industrious and intelligent cultivators in the Kanbis and with its ample manure resources, it has high potentialities for development, provided a definite source of ample water supply is guaranteed.

RAINFALL

The chief characteristics of rainfall in Mehsana district are its unequal distribution over the region, its irregularity throughout the season, its not so conspicuous, but gradual decline over a number of years and its liability to failure or serious deficiency. As the figures in Appendix No. 10 reveal, the normal quantity of rainfall varies from 20 inches at Vijapur to 9 inches at Harij. The regions nearing the Runn of Kutch have less rains on the whole, compared to the other regions of the district. The second important aspect is its irregularity during the season. Most of the rain is received during July to September. During these three months also its distribution is not uniform every year. As the rainfall recorded at Jagudan Farm for the years 1940 to 1949 shows, the rainfall is sometimes more in the second half of July and at other times in the second half of August. During winter months rainfall is almost negligible, while the hot weather from March to June is practically rainless. There has been a gradual decline of rainfall over a long period. The table given in Appendix No. 10 showing rainfall for the last 75 years clearly reveals that the average rainfall is now less than what it was some years ago. This declining trend is an unhappy feature and all steps should be taken to counteract its bad effects on the region.

The most unsatisfactory aspect of rainfall in Mehsana district from the point of view of agriculture is its liability to failure or serious deficiency. It is seen that during the last 54 years, nearly 44 years were not good years because of either irregularity of rain, serious deficiency or complete failure of rainfall. This uncertainty about rainfall is a very serious handicap to agricultural development.

IRRIGATION

The only ameliorative factor in this problem of water shortage for agriculture are the irrigation facilities that are and can be made available in the district. The following table shows the irrigation facilities existing in the district during 1949-50.

TABLE I

AREA IRRIGATED BY DIFFERENT SOURCES OF IRRIGATION IN MEHSANA DISTRICT : 1949-50

(In hundreds of acres)

	Mehsana	Total Gujerat	Total Bombay State
Government canals	—	42	3,782
Private canals	—	1	644
Wells	927	3,033	10,353
Percentage area irrigated by wells to total irrigated area	99.2	78.8	58.8
Tanks	—	218	1,540
Other sources	7	552	1,295
Total	934	3,846	17,614

Source : Season and Crop Report, 1949-50.

The above table reveals that there are no canals—government or private—in the district. Irrigation tanks also do not seem to be in working order. Wells are the only source of irrigation. In the whole of the district only 93,400 acres of land or, say about 4.8% of the total cultivated area is under irrigation. It will be worthwhile to examine in detail the various sources of irrigation available in the district and discuss the scope of their development.

WELLS

Well irrigation is and will always remain a vital factor in irrigation in India. In Mehsana district there are nearly 55,000 wells, irrigating 92,700 acres of land. Most of these wells are private. A considerable number of them are of masonry. The taluka-wise position regarding wells is as follows :

TABLE II

NUMBER OF WELLS PER 100 ACRES OF CULTIVATED AREA IN EACH TALUKA OF MEHSANA DISTRICT

Taluka	No. of wells for irrigation	No. of wells per 100 acres of cultivated land
Mehsana District..	54,457	2.9
Talukas :		
Mehsana	6,515	3.9
Visnagar	4,186	4.3
Kheralu	9,104	5.2
Kalol	5,930	4.4
Kadi	2,942	1.8
Vijapur	8,691	4.8
Patan	8,538	4.1
Sidhpur	5,684	4.7
Chanasma	2,662	1.3
Harij	160	0.1
Radhanpur	29	0.03
Santalpur	—	—
Sami	16	0.007

Compiled on the basis of data supplied by District Agricultural Office.

The above table clearly shows the paucity of wells in the district. On an average, there are 2.9 wells per 100 acres cultivated in the district. In comparison with the district averages, some of the talukas like Kheralu, Vijapur, Sidhpur etc. are in a better condition. But talukas on the western side near the Runn of Kutch are in very bad condition. Harij, Radhanpur and Sami reveal a very gloomy picture.

Moreover the water level in these wells is very deep. In Sidhpur, Patan, Chanasma, water is usually available at 30 to 40 feet. But in Harij and the adjoining areas it is not easily available even upto the depth of 100 feet. In addition to this, during summer the water in wells becomes very scanty and wells practically go out of use.

The number of wells not in use is about 2,111 in the whole of the district. This is a serious matter and steps should be taken to bring under use as many of them as possible.

TANKS

Tanks have been a characteristic feature of Indian agricultural economy since very early times. In Mehsana district there are a few tanks which can be used for irrigation purposes.

The most notable work of the district is Kadarpur tank called *Chimnabai Sarovar*. The tank is situated 3½ miles north of Kheralu The catchment area is 30 miles but some mistake seems to have crept. into the calculation and the tank has been made much too big for its catchment. No allowance was made for the fact that the catchment being sandy, the run-off would be small. No wonder that the water never rises more than two to three feet above the sill of the sluice and the tank has proved sadly disappointing. It is possible to divert a catchment area of 10 sq. miles on the left into this tank but it will be rather costly. The Maharaja of Baroda and the Nawab of Palanpur had agreed to an investigation being made in respect of the diversion of the Saraswati River or its affluents into Baroda territory by constructing a dam in Palanpur State and filling up the Kadarpur tank every year. But nothing seems to have been done in the matter.

This tank is reputed to be the *bete noir* of the district, but nobody realises the silent good work that it is doing in raising the sub-soil water level as will be seen from the table below. This is no mean asset in a country suffering from draught and where the water table is steadily going down.

TABLE III

WATER LEVEL IN A FEW WELLS BEFORE AND AFTER THE CONSTRUCTION OF KADARPUR TANK

(In Feet)

No.	Name of Village	Depth of water prior to construction of the tank	Depth of water after construction	Rise of Water
1.	Vadnagar	13	17	4
2.	Bahadarpur	19	26½	7½
3.	Shipore	22	27	5
4.	Kheralu	14	20¾	6¾
5.	Nainwada	3	8	5
6.	Balad	15½	22	6½
7.	Matekpur	7½	12¾	5¼
8.	Sundhia	8	12	4

Source : Technical Paper Series, Vol. V, Part 1, p. 21.

Sher tank in Kadi has a capacity of 75.5 m. ft., sufficient to irrigate about 2,100 bighas. The actual area irrigated has hardly exceeded 5 bighas. Another good tank in the same taluka is that of Chandrasan. The revenue expected from it was Rs. 2,400, but the actual irrigated area has never exceeded 112 bighas and the revenue Rs. 225.

Thol tank was constructed as a famine relief work in Kalol taluka in 1912. The capacity of the tank is 448 m. ft., sufficient to irrigate 7,200 bighas. Nearly Rs. 1,22,000 were spent on this tank having a catchment area of 5 sq. miles. But the result is poor because the work was carried out so carelessly and the whole tank is so full of clods that the Superintending Engineer, Irrigation, had to issue an order never to fill it beyond R. L. 159.00 where the capacity is only 96 m. ft. It goes without saying that when a tank is not filled up and its storage is wasted through fear of breach, it can never be of service. The proper course is to remedy the defects inherent in the hastily improvised famine relief work. This is a scheme of great promise and should be remodelled on right lines. The people round about are anxious to improve land and take to *Kyari* cultivation.

Another important tank situated in Kalol is that of Santej. It has a capacity of 75 m. ft., sufficient to irrigate about 2,100 bighas. The area actually irrigated has not exceeded 27 bighas. The cost of the scheme is Rs. 35,094, but it yields a very poor return.

Khokhala tank in Chanasma taluka has a capacity of 102 m. ft. and was meant to irrigate 1,000 bighas. It was completed in 1909 at a cost of Rs. 52,180 but the soil being composed of alkaline salt, the tank subsequently got breached and was abandoned.

In addition to the works noted above there are a number of other minor works also, the details of which are given in the Appendix No. 11. Thus, the district of Mehsana has got a number of good tanks, the improvement of which is essential from the point of view of increasing irrigation.

The P.W.D. of the district has taken up certain works for improvement. The schemes of tank improvement in operation are given in Table IV.

Over and above these schemes, there are a number of other small projects of tank improvement to be taken up under scarcity programme. Tanks like Ambela Pipardi, Adrij etc. are included under it. It is also proposed to improve the Anawada Weir across the Saraswati in Harij taluka. The Weir was breached in 1918. It has a very big catchment area and is sufficient to irrigate 13,000 acres. There are a number of other small schemes, the details of which need not be mentioned here. It is expected that on the completion of these schemes a considerable portion of land would come under irrigation.

TABLE IV

SCHEMES FOR TANK IMPROVEMENT IN OPERATION IN MEHSANA DISTRICT : 1952

Name of the Scheme	Estimated Cost Rs.	Present irrigation	Additional acres likely to be irrigated	Additional Food Crops Tons	Cost per acre Rs.
Thol tank Kadi Taluka	87,000	*Nil*	2,000	—	—
Khokhala tank Chanasma Taluka	2,00,000	*Nil*	600 to 800	230	250
Jamarpur tank Harij Taluka	6,000	*Nil*	400	130	150
Santej tank Kadi taluka	25,000	Himayat tank	200	66	125
Sher tank Kadi taluka	60,000	,,	300	100	200
Chimnabai tank	46,000	1,000 acres	400	130	115

Source : Office of the P. W. D., Mehsana District.

HYDROLOGICAL SURVEY

In the whole of the North Gujerat area the scope for normal irrigation schemes is very limited. There are no big perennial rivers. The rainfall is poor and uncertain. There is a general dearth of surface water in the region.

The practice of sinking wells for the supply of water is immemorial, and is resorted to freely. But owing to the lowering of sub-soil water level, sinking of wells has become more costly and beyond the capacity of ordinary farmers. It is much to be regretted that owing to sad experience in the past, the construction of irrigation tanks has come to a standstill. If this had gone on, it would by now have not only reclaimed a vast area but would have also raised the sub-soil level of water. This is what will eventually have to be done for boring, however effective and useful, serves only small areas and cannot on the score of cost be carried on an extended scale. However, for some years to come boring will be the only way of supplying water to village communities.

For this reason, a hydrological survey of the region is of great value. It was a wise measure on the part of the Baroda Government to order a rapid hydrological survey of the district so that it may be possible to form a general idea of the water table in the different parts of the district and also to ascertain where zones of artesian and sub-artesian supplies are situated, so that the task of preparing the estimates of the cost of boring in different parts of the district may become easier and it may be possible to draw reliable estimates before carrying out any bore and to have an idea as to the depths at which artesian or sub-artesian supplies are met.

Bore Waters in Chanasma and Harij Mahals

In Chanasma and Harij Mahals there is a great scarcity of water even for drinking purposes. The Baroda Government had carried out in these two mahals several borings at various places. These borings have been quite successful and are throwing out water at nearly 10,000 gallons per hour. It was felt by the *Suba* of Mehsana Prant that such a large quantity of water should not be allowed to go waste if any effective use was possible. Dr. C. C. Shah, the then Agricultural Chemist to Baroda State, was asked to report on the matter.

At the time of Dr. Shah's inquiry the number of borings in Chanasma was 47, and that in Harij 24. In all cases borings have been carried out to such a depth that a constant overflow is maintained. Besides these borings which were all done by Prant Panchayat, there were a large number of private borings also in the Chanasma Mahal.

After analysis it was found out that water below a depth of 300 feet is quite different from that above it. All waters from wells of depths less than 300 feet show the presence of sodium bicarbonate. All waters below 300 feet contain sodium chloride (ordinary salt). If any of these waters are used constantly for irrigation, they are definitely harmful in certain conditions. The upper level water will change the character of a clay soil and cause water-logging. The deeper waters are most likely to change the land to alkali land.

In a majority of the areas in Mehsana district, however soils contain a large portion of coarse and fine sand, and hence there is little likelihood of water-logging taking place. Moreover there is a high percentage of lime in these soils which will tend to counteract any bad effects due to the presence of sodium bicarbonate. For the above reasons, it is possible to use the water of bores of less than 300 feet for irrigation without the fear of any harm being done to the field. Caution, however, is needed in applying the water to low-lying areas or where accumulation of clay has taken place. Such places are likely

to be injured from upper layers and the tendency of the irrigating water to cause water-logging.

With regard to the use of deeper level waters for irrigation, it should be recognised that more than 50% of the total solids consists of sodium salts. If there is any possibility of accumulation, it will render the soil useless. If they are applied, it should be seen that fully effective drainage facilities are provided as by deep drains into which the salts accumulated in one dry season may be washed out by the rains of the next monsoon. At no time should salt be allowed to accumulate unchecked.

All these waters have at one time or another been used for irrigation by the people of different villages. It is observed that the upper level waters are not seriously harmful, so much so that in a village named Kamboi, there are eleven private bores in operation. This should be a sufficient indication of the use of upper level waters for irrigation.

In regard to the deeper level waters, the experience of the farmers differ according to locality. In Ravindra a farmer has used deeper level water for seven years without any marked adverse effect on his fields, whereas in Tharod and Chandroda the complaint is that soil was spoiled after one year's application. It is possible that if proper and systematic drainage is provided, this harmful effect would not occur.

In view of the above facts, it is suggested that bores which are intended for irrigation should not be sunk to a level deeper than 300 feet. If this is adhered to, the water that is likely to be obtained will not cause harm to the soils in Harij, Chanasma and other adjoining talukas of Mehsana district.

One point which requires attention is the disposal of water. It was found during our investigation also that in many villages the water from a deeper level is allowed to flow in a pond which has apparently no exit. If this state of affairs persists, it is certain in time to injure the land in the neighbourhood. Huge quantities of salt (if the flow is 1000 gallons per hour, Dr. Shah estimates 400 lbs. of salts per day) would be brought up every day. If no proper provision is made for the disposal of water, the salt contents of the land in the vicinity would increase, and land will not remain useful for cultivation. All possible steps should be taken to secure a proper disposal of the water before it harms the cultivable area of the region.

Tube-Well Borings

In the absence of sufficient rainfall and perennial water-supply from rivers, it is desirable that sub-soil water be brought out by all the means available. Fortunately, as seen above, the sub-soil water in practically the whole of the district is fairly copious and constant and

a fair beginning has already been made through private enterprise as well as through governmental agencies to tap this water with very remarkable success. If this activity is spread over a wider area it would definitely mean that a very effective step to meet the threat of scarcity had been taken.

The idea of boring is not a new one. But it is only of late that it is being carried out in a scientific manner and to considerable depths. As of late, dry years rapidly followed dry years, the question of tapping the subterranean supplies began to receive the consideration of different governments. Seeing the activities in Bombay Province, the Baroda Government also decided in 1912 that investigations on lines similar to those in Bombay should be carried out.

Without entering into historical details of the past, it will be worthwhile to examine the present situation. In 1950-51 there were in all 27 tube wells in Vijapur taluka. Another additional 27 new tube wells have been constructed under the National Tube Wells Scheme. Out of these nearly six wells have not come up to the desired standard. In a majority of these tube wells, the per hour discharge of water is more than 25,000 gallons. One fact to be noted here with deep regret is that even though the original target of the National Tube Wells Scheme was to construct 400 tube wells, they have been able to construct only 27 tube wells by July 1952. The progress is too slow to make one optimistic about its future prospects.

Lift Irrigation

It is desirable that lift irrigation be taken up at a number of suitable places on rivers like Banas, Sabarmati and Saraswati. There is a continuous water supply in these rivers for some months and ample underground supply throughout the year. The underground water is not very deep, and as good soil is available along the banks of river, lift irrigation would be of great help. The capital cost of lift irrigation schemes is found to be low, ranging from Rs. 150 to 200 per acre, and it is more suited to this area. The Punasan water works in Sidhpur taluka are a striking example of the effectiveness of the scheme.

In order to encourage co-operative effort in the field of lift irrigation, the government has made a number of concessions to co-operative bodies formed for lift irrigation purposes. Long term loans at a cheap rate of interest to the extent of 50% of the cost of purchase and installation of the irrigation machinery are offered by government to each society. In addition, a loan equivalent to the cost of laying out drains, pipe lines etc. incurred by the society and subject to a maximum of Rs. 10,000 or half the cost of pumping set, whichever is less, and bearing a cheap rate of interest, is also granted.

As the recent report goes to show, lift irrigation societies are gaining ground in the district. In the project area a good many societies have been formed. Still, however, formation of lift irrigation societies at a greater rate is highly desirable.

Inundation and Irrigation Works

The plans and estimates for constructing inundation canal on river Banas at Cochand in Radhanpur taluka has been technically approved and administratively sanctioned at Rs. 6,14,336. It would irrigate 10,000 acres in the first instance. The scheme is to be extended upto 40,000 acres, if the supply of Banas is found to be sufficient.

Similarly, in Radhanpur taluka there is another scheme of inundation with or without a pick-up weir from river Saraswati at Annawada near Patan. It is still under consideration. This scheme has great potentialities and more investigation is required. This project when finished will protect a large number of the population from want of water and ensure Kharif as well as Rabi crop in a very large area.

These type of inundation irrigation possibilities would also be found to exist if the upper range of the Saraswati was surveyed and possibilities explored with reference to Kheralu, Visnagar and Sidhpur talukas.

Small Bunds Across Rivulets

The north and middle Mehsana area, comprising mostly of Kheralu, Visnagar, Mehsana, Sidhpur and Chanasma are interspersed at nearly every two to four miles by small rivers or rivulets which mostly flow and overflow during the monsoon season. It may prove of great benefit if at a regular interval of five to ten miles in each rivulet a low flat sluiced bund were constructed. This may give a very good percolation effect to the whole plain of the district, raise underground water level and increase vegetation. If the storage is in good quantity it can even be utilised for lift irrigation purposes.

A soil conservation and contour bunding scheme for the preservation of rain water in the fields should also be taken up on a large scale. The Department of Soil Conservation has bunded nearly 1,863 acres of land and is likely to do more work in the course of the year. However, it is to be noted that, because of the ignorance and orthodox nature of the cultivators, sufficient advantage is not taken of the scheme.

Sabarmati River Project

The Sabarmati 'pick-up' weir scheme is a part of a big scheme whereby it is proposed to build a large dam across the Sabarmati river at Dharoi. It was a combined irrigation and hydroelectric (hydel) project based on a scheme previously considered by the Government

of Bombay but abandoned largely on grounds of expense and insufficient returns, as well as in order to avoid any possibility of causing water shortage in the Sabarmati river at Ahmedabad. Dr. M. R. Sahni of the Geological Survey of India made an investigation of the Dharoi site in March, 1944, and stated "the alignment of the main Dharoi dam lies between the Dharoi and Ambawada hills both of which are composed of massive granite. Seventeen borings have been taken across the bed of Sabarmati river here. While the granite composing the cores varies to a certain extent, it is in all cases hard and compact and quite suitable for a dam foundation."

Dr. Sahni had also selected a site for a pick-up weir about 20 miles downstream from the main dam at Deria, roughly three miles from Ransipur and has given good reasons for considering the Deria site as suitable for a pick-up weir.

According to Dr. Cyril Fox, who was consulted by the Baroda Irrigation Department regarding the site of a pick-up weir on the Sabarmati, Ransipur is another ideal place for a dam.

At present the project is under investigation by the Central Water and Power Commission. It is proposed to construct a dam 120 feet high above the river bed at Dharoi across the Sabarmati river. The capacity of the lake would be one million acre feet or 43,000 m. ft. The storage proposed is much in excess of the run-off in average years and is intended to provide as much of carry-over capacity as possible to make up the deficiencies in cycles of poor rainfall which are common in this catchment.

It is considered possible to generate 2,000 kws. of continuous power at a dam site and most of this power could be utilised for lift irrigation in the Mehsana district. The remaining power could be utilised for rural electrification and cottage industries.

It is also proposed to irrigate about 1,00,000 acres by means of a canal taking off above a pick-up weir across the Sabarmati near Ransipur. In addition to the irrigation a discharge of about 100 cusecs would be made available for the Ahmedabad city water supply. The preliminary details of the project show that it would be of immense benefit to the region. All efforts should be made, therefore, for its early construction and operation.

CONCLUSION

Various sources of irrigation have been examined above in detail. The most advantageous source seems to be one of tapping the sub-soil water by tube wells, as a measure in minor irrigation schemes. Formation of a number of co-operative societies for tube well irrigation would be of great utility.

The Government of India is much interested in minor irrigation as is evidenced by various schemes like tank improvements etc. which would irrigate the land at a certain cost per acre. In Mehsana, over and above the improvement of tanks, irrigation can be greatly extended if government is prepared to finance the borings either by a subsidy or loans on a large scale. The objective should be to have two or three tube wells in every village of the famine affected area in the district, undertaking irrigation on an average of about 150 bighas of land.

For small well schemes, perhaps the State Government would be the proper agency for financing the smaller schemes covering less than 25 acres, and in fact, they have been doing so from time to time. For more ambitious schemes the Government of India should be the proper source of help either by way of subsidy or loans.

The scheme proposed for the object is as follows :—

(1) Each co-operative pumping society that may be willing to sink bores and go in for pumping should be aided by a subsidy or a loan on a fixed percentage.

(2) The area under command should not be less than 100 bighas.

(3) When the society develops, a loan recoupable in 19 years on successful bore should be advanced. The Government of India may recoup this subsidy by suitable instalments after 2 years in say ten years.

(4) 51% of the membership of the society should be in the hands of owners of land who are benefitted.

(5) In case of failures *i.e.*, where water is not struck or is not suitable for cultivation, the digging charges of the bore should be borne by Government, subject to a maximum of Rs. 6,000 per bore.

This has been recommended after considerable experience of the water levels and digging conditions etc. The inducement for covering failures is likely to go a long way in voluntarily helping this activity. The subsidy given should be in the form of a loan so that the scope of the scheme, if successful, could go on increasing without any additional financial burden to the Government of India. Unlike the minor irrigation projects of the Government of India, the chief point we would like to urge is that the incentive here is a very considerable one *viz.* 50% of the finance and total expenses of running the schemes. If it is possible to cover even 100 villages with 2 wells each, we will go a long way in achieving freedom from dependence on the rains.

The expected results of the scheme generally are as follows :—

(1) The Government of India would be having 400 acres of land under engine pump irrigation at a cost of only Rs. 6,000 on failure, as the ratio of failure to successful bores in parts to be selected will never exceed 25% or one in four bores.

(2) The Government of India will be financing the scheme to the extent of Rs. 40,000 per 400 acres of land to be covered under irrigation and the cost is 100 rupees per acre only—a part of which would be by way of loan and part of which by way of subsidy on a basis of 50% loan and 50% subsidy. The cost per acre on actual subsidy need not be more than Rs. 50 per acre, which compared to the minor irrigation is a very satisfactory percentage indeed.

(3) After initiating the scheme, it could be put wholly on a loan basis, thus eliminating the subsidy altogether and getting it wholly on a commercial basis after say two years, except for failures whose only digging cost would be payable by Government *i.e.*, about Rs. 5,000 per four bores.

The above is in nut-shell the scheme which is proposed by the District Development Board and it needs no special pleading as the finances are wholly usefully employed in the end. It has been submitted for the consideration of the Government of India.

CHAPTER VIII

LIVESTOCK

Mehsana has long been known for its Kankrej cows and Mehsana buffaloes. The Vadhiari breed, noticed mainly in Harij and Radhanpur talukas of the district, is also known to be of superior quality. For years, these breeds have been preserved by the professional nomadic breeders, the Rabaris. The peculiarity of the cattle industry in Mehsana is to a great extent its nomadic system as against the stable system prevailing in the district of Kaira and other parts of Gujerat.

LIVESTOCK POPULATION

Until 1920, no regular livestock census was taken in Baroda State. Only a rough estimate was prepared every year by the Revenue Department to assess the sufficiency or otherwise of the State's agricultural wealth. It was only in the year 1920 that the first attempt was made at a regular census of livestock. The conditions disclosed by the census were found to be generally satisfactory, and it was decided to have such a census every five years. But the decision was not put into action. It was only in 1930, along with the census of population, that a complete and accurate census of livestock was carried out.

It is interesting to study the trend of cattle population in a region from various points of view—its pressure on cultivated land, availability of draught as well as milch cattle, its increase or decrease in number or of the extent of land etc. The change in State boundaries after the merger has made the task of comparing the present figures with former ones difficult. However, we can take the pre-merger period for studying the trend.

VARIATION IN LIVESTOCK POPULATION OF MEHSANA DISTRICT
1930-1945

Type of Live-stock	1930	Variation percentage since 1920	1940	Variation percentage since 1930	1945	Variation percentage since 1940
Bulls & Bullocks	1,73,429	−40.5	1,81,732	+ 4.7	1,67,469	− 7.8
Cows	76,165	− 8	66,927	−12.1	77,518	+15.8
Buffaloes	1,98,844	+ 4.2	2,07,094	+ 4.1	2,17,450	+ 5.0
He-Buffaloes	6,105	−29.0	1,139	−81.3	610	−46.4
Young Buffaloes	1,40,130	+ 8.9	1,79,740	+28.2	1,77,056	− 1.4

Source: Livestock Census, Baroda State.

It is apparent from the above table that the number of bulls and bullocks is declining. From 1920 to 1930 the reduction was as large as 40%. Even in the last quinquennium of 1940 to 1945 there has been a further decrease of nearly 8% after a slight rise in the preceding period. In the same way there is a tremendous decrease in the population of he-buffaloes also. A reduction in draught animals is suggestive of depletion of livestock resources of the farmer. Not only is the cultivator made poorer in cattle wealth as such, but the cultivation of land is adversely affected.

The same tendency is visible in the number of cows. But this reduction, it can be said, is counter-balanced to a great extent by an appreciable increase in the number of buffaloes. One fact still to be noted is that in the last quinquennium there has been a positive fall in the number of younger stock both in respect of cows and buffaloes. Such a tendency signifies that there may arise in future a shortage of cows and buffaloes.

After the reconstitution of the district, the picture has somewhat changed. The present position regarding livestock is as follows :

LIVESTOCK POPULATION : 1951

Region	Bovine ('000)	Ovine ('000)	Cultivated area in ('000) acres	Area per animal in acres
Gujerat	53,07 (100)	17,94 (100)	14,144 (100)	2.0
Saurashtra	13,80	14,32	6,860	2.4
Mehsana	7,38 (13.9)	2,74 (14.7)	1,959 (13.8)	1.9
Cattle	393	Sheep	104	
Buffaloes	344	Goats	159	

Source : Livestock Census, Government of Bombay.

The district of Mehsana has at present a total bovine population of 738,124 and ovine population of 274,267. This comes to nearly 14% of bovine population and 15% of ovine population of Gujerat. Compared to the Saurashtra region, with its cultivated area, the bovine population of Mehsana district is very large. The ratio of cultivated area to cattle is lower in Mehsana district as compared to both Gujerat and Saurashtra. One fact is to be borne in mind in interpreting these

ratios *viz.* the comparison of livestock pressure on land cultivated would depend upon the type of soil and its productivity. The soils of Saurashtra have poor fertility and less productivity in many cases. Compared to the all-India figure of 1.2 acre of cultivated area per animal, Mehsana district is in a better position.

Looking to the density of livestock population the density of bovine population comes to 258 per sq. mile, and that of ovine to 64 for the whole of the district. Examining it taluka-wise, we get the following position :

DENSITY OF LIVESTOCK AND HUMAN POPULATION

(Per square mile)

Taluka	Density of Bovine Population	Density of Ovine Population	Density of Human Population
Vijapur	248.1	63.9	562
Visnagar	277.7	90.8	548
Mehsana	223.0	69.8	551
Sami	78.5	43.9	92
Radhanpur	129.9	84.0	170
Santalpur	77.0	71.1	92
Kalol	116.3	57.9	591
Harij	137.5	46.5	212
Kheralu	232.4	66.0	389
Kadi	159.5	43.0	385
Chanasma	178.5	59.0	334
Patan	202.0	84.4	416
Sidhpur	258.4	63.4	606
District Total	178.4	64.0	357

The talukas of Visnagar and Sidhpur with a density of 278 and 258 bovines per square mile are relatively densely populated. The talukas like Sami, Santalpur and Radhanpur which have low density of human population have low density of bovines also.

MILCH AND DRY CATTLE

What is important in relation to cattle population is not only their quantitative growth or decline, but their qualitative conditions. The ratio of milch to dry cattle, the proportion of draught animals to total and the livestock which is of no economic use, are some of the factors which need be studied to assess the problem in right perspective.

PROPORTION OF MILKING AND DRY CATTLE IN MEHSANA DISTRICT : 1950

Divisions	In Milk		Dry and not calved	
	Cows %	Buffaloes %	Cows %	Buffaloes %
Mehsana District	46	60	54	40
Vijapur	41	59	59	41
Visnagar	61	88	39	12
Mehsana	41	55	59	45
Sami	40	45	60	55
Radhanpur	43	55	57	45
Santalpur	50	52	50	48
Kalol	45	64	55	36
Harij	47	55	53	45
Kheralu	46	57	54	43
Kadi	46	60	54	40
Chanasma	48	57	52	43
Sidhpur	45	54	55	46
Patan	48	55	52	45

Source : Livestock Census, 1950.

The above table reveals that cows in milk form 46% only, whereas buffaloes in milk form 60% of the total. The proportion of dry cows seems to be very high. A certain proportion of unproductive animals is inevitable, but when it is too large, either because the periods of lactation are short or the frequency of calving low, cattle rearing and breeding become less remunerative.

The question of milch cattle leads us to the consideration of milk supply in relation to the population of the region. The following table gives the proportion of persons per head of milch cattle and supply of milk per head of population.

POPULATION AND MILK SUPPLY IN MEHSANA : 1921-51

Year	Milch Cattle Cows and Buffaloes	Population	Proportion of persons per each head of Milch Cattle	Daily supply of Milk in the State in seers	Average supply per individual in seers
1921	2,72,902	9,00,578	3.3	9,47,976	0.95
1931	2,75,009	10,10,007	3.4	8,94,798	0.88
1951	1,85,524	14,71,662	7.9	12,69,084	0.86

In the above table figures for 1921 and 1931 are taken from the 1931 Census for Baroda State. Figures for 1951 are computed on the basis of data available for milch cattle and population. In the 1931 Census, North Gujerat cows were considered useless for milk-giving purposes. The milk supply for 1951 is calculated on the basis of a village inquiry carried on by Indian Council of Agricultural Research. According to their calculations the average milk yield per day of a Kankrej cow comes to 3.9 lbs. and that of she buffaloes to 7.97 lbs. For our calculation we have accepted 4 and 8 lbs. respectively. On that basis, the picture presented by the above statistics is not very encouraging. The average number of persons per milking animal has increased very much and consequently the milk supply per individual has gone down to a great extent. Moreover, it is to be remembered that a big industrial city like Ahmedabad being near, a considerable quantity of milk supply is diverted toward Ahmedabad. Thus for the district proper, the milk supply is still low.

Looking to the other aspect of livestock utility *viz.* the use of bullocks for cultivation, the Kankrej breed is of very great importance. It is believed that in North Gujerat, cattle are mainly kept for the purpose of bullocks rather than that of producing milk. The Kankrej cattle are very highly prized as powerful draught cattle and are widely used in the regions of Gujerat and Kathiawar. In the past they were even exported to North and South America for grading up indigenous cattle and have thrived there well. The practice of using he-buffaloes for cultivation is not prevalent at all, and hence, only bullocks should be taken into consideration.

To ascertain the quantitative scarcity or otherwise of bullocks in the region it will be worthwhile to study the extent of cultivated area to a pair of bullocks in the region and its different parts. The following table compares the figures of some years.

AREA CULTIVATED PER PAIR OF BULLOCKS

(in bighas)

Year	
1910	21.8
1920	23.0
1930	27.5
1940	24.1
1950	31.9

Source : Statistical Abstracts and Census 1931, Baroda State and Livestock Census, 1950.

It appears from the table that the area cultivated per pair of bullocks is increasing every decade. The increasing average is an indication of the gradual decline in the number of bullocks available. There is one other possibility also *i.e.* that the economic condition of the cultivating class as a whole may be deteriorating and this may be compelling the cultivators to part with their cattle and sell them off outside the district. Trade in cattle in the district is one of the important occupations and it is no wonder if it has facilitated the decrease.

To ascertain this tendency in greater detail, it will be worthwhile to have comparative figures of some of the talukas, the areas of which have remained more or less unchanged for some time.

AREA CULTIVATED PER PAIR OF BULLOCKS IN SOME TALUKAS OF MEHSANA DISTRICT

(in bighas)

Taluka	1920	1930	1950
Visnagar	22.1	22.7	25.67
Patan	23.7	22.9	29.41
Sidhpur	24.5	23.1	22.95
Mehsana	22.2	25.3	32.81
Kheralu	20.8	26.3	21.42
Vijapur	13.2	27.5	28.39
Kalol	25.1	29.6	37.91
Chanasma	27.0	33.1	35.70
Kadi	22.8	35.2	41.14
Harij	28.6	42.6	43.86

Source : Compiled on the basis of Census of Baroda, 1931 and Livestock Census, 1950.

The above table clearly shows that the area cultivated per pair of bullocks is increasing in each division. The normal area which a pair of bullocks can easily cultivate is 20 bighas. It can be seen that, at this rate, almost all the talukas are in deficit in regard to supply of plough cattle. But this estimate is rather too low. The normal area would vary with conditions of cultivation in different divisions according to different crops, type of soil, irrigation facilities etc. After allowing for all these differentiations, we may assume 30 bighas as a normal area for a pair of plough cattle to till. Even on this assumption, we find that nearly five talukas suffer from deficiency of plough cattle.

This tendency can also be seen from the proportion of bullocks to registered khatedars over a number of years. The following table gives the comparative figures.

Year	Average No. of Bullocks per Khatedar
1920	1.20
1930	1.06
1950	1.04

Source : Compiled from Census of Baroda 1931, Livestock Census, 1951 and Figures from District Agricultural Office.

Thus the situation is really worsening. The average number of bullocks per khata in Mehsana district has fallen from 1.2 in 1920 to 1.04 in 1950. This means that a large number of khatedars have to be without enough plough cattle for cultivation. It may be that this is so because of the greater proportion of small holdings in the region.

THE QUALITY OF LIVESTOCK

Over and above the quantitative aspect of livestock examined by us, it is important and worthwhile to look into the qualitative aspect also. It is difficult to get sufficient data for a qualitative examination. We are glad to note here the effort made in this connection by Dr. Mundhe, the then Director of Veterinary and Animal Husbandry, Baroda State, who carried out an inquiry of several Rabari families in Mehsana district. The following table showing the qualitative condition of livestock in Mehsana district is taken from a note prepared and submitted by him to the Government of Baroda.

	Item of Comparison	Conditions 50 years back	Conditions at present
1	Families of Rabaris engaged in cattle breeding industry	100 per cent	60 per cent
2	Average strength of cattle herds of each family	15 to 30	6 to 15
3	Age of first calving	2½ years to 3½ years	4 to 6 years
4	Calving interval	15 to 18 months	18 to 36 months
5	Average daily milk yield	8 lbs.	hardly 3 lbs.
6	Average No. of calves during life time of a cow	6 to 8	2 to 4

The above averages indicate a serious deterioration at present in the rearing of the cattle by the Rabaris who are the professional breeders. The average number of calves during the life time of a cow is reduced to nearly one-third. The calving interval as well as the first age of calving have increased. The decrease in milk yields as well as the reduction in the period of lactation lead to a fall in the total milk supply. Thus there seems to be an all round deterioration of cattle wealth. This process of degeneration of cattle involves a potent danger causing scarcity of working bullocks and threatening the agrarian economy of the region as a whole.

Causes of Deterioration

In view of the great importance of livestock to an economy which is highly agricultural, the present position is deplorable. Malnutrition, promiscuous mating, improper and insufficient care, and ignorance and lethargy of the people in general and breeders in particular are some of the factors responsible for this degeneration. The causes of deterioration of cattle may be discussed under the following heads (1) Fodder (2) Want of proper care (3) Lack of good breeding (4) Diseases and pests (5) Problems of nomadic system of rearing of livestock.

(1) *Fodder*

The fact that the cattle in the district are seriously underfed, particularly the cows in rural areas, can be seen from their very appearance, the slow rate of their growth, their late maturity and the long dry period of the cows. The practice of stall feeding is rare and the grazing and grasslands of the region do not seem to be adequate.

With the rapid growth in population and its pressure on land, along with the absence of alternative avenues of employment, the quantum of land available for grazing has declined considerably. Natural grazing has also decreased considerably. The natural grazing lands are usually to be found within the areas classed for statistical purposes as 'forests', 'cultivable waste' and 'not available for cultivation'. The district of Mehsana has a very small percentage of area as forest. Whatever little exists, is in Radhanpur taluka. It seems that the quality of pasturage has deteriorated because of early practice of overgrazing. Cultivable waste land, though another source of fodder supply, is not so useful for grazing purposes because it does not produce any useful herbage. Moreover, sometimes these waste lands (*kharabas*) are full of shrubs, uneven and unprotected and serve as breeding grounds of mongrel stock and diseases of all kinds. Similarly the land not available for cultivation is not useful for grazing because it is either barren or unproductive.

Generally fodder is limited to the dry stalks of jowar, bajri etc. Grains and pulses are hardly used as cattle food. 'Guwar' is the main food of draught animals. Cotton seed provides a very useful source of nutritious food. But the availability of cotton seed to the extent required, and their proper use is a problem by itself. On the whole, the grass and the leguminous crops produced on the alluvial loamy soil serve the purpose of fodder for livestock to some extent. But on the whole it can be said that the district is not having much of rich qualitative fodder.

In this connection the danger to grass which is stocked for summer should be noted. There is evidence of criminal tendencies in the district which lead to burning of the grass stacks. During the year 1914 to 1924 nearly Rs. 25,000 worth of grass was burnt in this manner every year. The tendency seems to be on the increase at present. This should be stopped as early as possible to ensure fodder supply during scarcity times in the summer season.

Thus the lack of sufficient pastures, the absence of continuous supply of good quality fodder and the inability of livestock owners to stall feed their animals lead to a gradual qualitative and quantitative deterioration of the livestock population.

(2) *Want of Proper Care*

Another important cause for the deterioration of cattle is the peculiar attitude of the cultivator towards livestock and its professional breeders. The general neglect of the cow and her female calf, both of whom are starved from birth to death, has a very deleterous effect on the breed of the cattle. Although draught animals and buffaloes are properly fed, the cow gets nothing even in stall feeding. This

peculiar apathy towards keeping cows, and purely utilitarian motive in keeping draught animals and buffaloes only have very bad consequences. The neglect reduces milk yields and affects the quality of cattle. The cultivator does not use he-buffaloes for draught purposes. Hence there is a great waste of he-buffalo power also.

Another problem is that of useless and uneconomical stock which forms a large proportion of the animal population. It has been seen before that the proportion of dry cows and buffaloes is 60 and 40 respectively. This is a burden on the agrarian economy of the district.

Moreover the productive value of the cattle is not commensurate with their numbers. In fact, large number of dimunitive cattle are a serious drain on region's fodder supply and eat into profits from agriculture. A small animal consumes proportionately a much larger quantity of food than a bigger animal. Thus the deterioration in quality of cattle involves a number of other losses also.

The number of cattle is so large and their efficiency so low that the task of reversing the process is extremely difficult. In several ways social and religious sentiments also come in the way. The absence of good number of Goshalas and Panjrapoles leads to setting free of the many useless animals which in turn leads to indiscriminate breeding and affects the qualitative aspect in the long run.

(3) *Breeding*

Another important cause for deterioration of the quality of cattle is the lack of good breeding stock. There are villages where no good breeding bulls are to be found. The scarcity of stud bulls and buffaloes is due to the fact that no private individual can afford to maintain a stud bull of good quality. Secondly the methods of scientific breeding are unknown to the stock owners.

At present, it is an accepted policy of Government to breed dual purpose animals and grade up the local cattle by means of pedigree bulls. The Premium Bulls and Premium Cow schemes have become popular in Bombay State. Looking to the number of Premium Bulls in Mehsana district we note that it is very small. The number of services given by all the premium bulls in the whole of district comes to 369 only. On the other hand it may be noted here that for the district as a whole the ratio of bulls to cows is 1 to 36. This means that, if we accept the standard of 1 bull to 65 cows laid down by the Committee on Cattle Preservation, the number of ordinary breeding bulls is very high. This leads to indiscriminate breeding and a rapid deterioration of the quality of breed.

(4) *Cattle Diseases*

Cattle diseases are also responsible for the decay in quantity and quality of cattle. In villages cattle suffer from a number of contagious diseases like rinderpest, foot and mouth disease, anthrax etc. A survey was carried out by the Indian Council of Agricultural Research on behalf of Baroda State on the diseases of animals in Baroda State. Official records for the last 10 years were studied and a number of State dispensaries and villages were visited. The following figures for the whole of Baroda State may be accepted as giving a rough idea of the conditions in Mehsana district also, because as far as the problem of livestock was concerned Mehsana formed one of the important divisions of Baroda State.

INCIDENCE OF DISEASES IN ANIMALS

Disease	Incidence	Mortality
Haemorrhagic Septicaemia	25.0%	93%
Rinderpest	16.0%	52%
Bovine Surra	4.5%	68%
Equine Surra	9.0%	61%
Foot and Mouth	45.0%	0.003%
Anthrax	0.2%	100%

Among the non-contagious diseases it was found that cancer of the horn accounted for 10 to 13% of the cases admitted to the veterinary hospitals. From the above figures, it is apparent that the incidence of the disease of foot and mouth is very high, while mortality is high in Anthrax, Haemorrhagic Septicaemia, Bovine Surra and Rinderpest.

As against the incidence of various diseases, the facilities for veterinary dispensaries seem to be very poor. The total number of veterinary dispensaries is only 10. In the talukas of Radhanpur, Santalpur, Sami and Harij, where the population of livestock is considerable, there is no veterinary dispensary at all. The absence of adequate medical facilities and preventive and curative measures, lead to high mortality, poor health and general deterioration of the livestock as a whole.

(5) *System of Maintaining Livestock*

The peculiar system of maintaining livestock *viz.* the nomadic system which is prevalent in the region has an important role to play in the betterment of livestock in Mehsana district. If the future of Kankrej breed is to be brightened, and if the whole of the livestock industry is to be rejuvenated, the system requires to be studied in detail and the problems arising out of it considered sympathetically.

The System of Maintaining Livestock in Gujerat

Rearing of livestock as practised in Gujerat and Saurashtra can be broadly classified under two systems, (1) the stable system and (2) the nomadic system. The former is followed by all the stabilised land-holding or agricultural classes of people and the latter by all those who have no lands but only big herds of cattle and who go about periodically moving from place to place wherever grazing may be available. The former can be called mixed farmers in a limited sense, while the latter as purely stock breeders.

The stable or agricultural class of breeders, however does not keep all kind of animals; it restricts its livestock to definite species of animals and to a limited number. The breeder may maintain one or two buffaloes and the necessary number of working bullocks. None of the cultivators keep sheep, goats or camels. They are mainly kept by nomadic classes.

The Rabaris—Nomadic Breeders of Mehsana District

The communities that are associated with the nomadic and herd breeding system of livestock are mainly (1) Rabaris (2) Bharward (3) Maldhari (4) Ahir and (5) Charan. The last three are found mostly in Saurashtra State, wile the first two both in Gujerat and Saurashtra.

Rabaris are the main cattle breeding community in Gujerat and it is believed that 90% of the cows in Northern and Central Gujerat belong to this community. The cow in Gujerat has survived because of this community and credit for preservation of the good Kankrej breed should go to them. The nomadic cattle breeder played an important and beneficial role in the agrarian economy of Gujerat in the past when unoccupied areas in intensively cultivated and densely populated tracts round about were ample. But with the passage of time, the unoccupied areas which were used for grazing purposes are being reduced and the nomadic breeders are becoming a menace to cultivators. The problem of nomadic breeders has become very acute at present and warrants special consideration.

In the past they did not possibly feel it necessary to take to cultivation of lands, partly because cattle breeding was tolerably good economic

profession and partly because ranch system of cattle-breeding and cultivation could not go hand in hand.

Though the Rabaris are distributed all over Gujerat, the bulk of their population is in Mehsana district. According to the 1941 Census Report nearly 71% of Rabaris of Baroda State were staying in Mehsana district.

The Problem of Nomadic Breeders

The main source of livelihood of all the nomadic breeders is livestock. Practically none of them had any piece of land of his own to graze the cattle in or to produce fodder crops wherewith they can maintain their stock. The present tendency, however, does not enable him to become a patron of cow nor do the resources available for grazing and fodder production enable him to carry on his profession. With the growth of population, the demand for foodgrains and raw materials of industries exerted a great pressure on land, with the result that more and more land came under the plough and less land was available for grazing. This affected the nomadic breeders adversely. Looking to the figures of Baroda State alone one finds that only 48% of the total area was occupied in 1881 whereas it was 75% in 1941. The percentages of cultivated area to cultivable area for the respective years were 81% and 96%.

Being deprived of free and ample grazing of unoccupied areas, the breeder began to encroach upon the crops of stabilised cultivators. This resulted in conflicts between the breeders of stock and tillers of the soil. The disharmony went upto such an extent that the Baroda Government had to frame repressive laws protecting the interest of peaceful cultivators. But these restraining steps unaccompanied by any ameliorative measures resulted in a greater discord, causing deterioration in cattle population, enhancing the poverty of the breeder and developing criminal tendencies amongst them. The breeders of the stock and the tillers of soil began to look upon each other as enemies and the "rabari is now being looked upon as a pest, a nuisance and enemy number one of the cultivator."

The main problem at present is how to utilise their knowledge of cattle breeding in the best possible way and to find out the means by which their peculiar disabilities—loss of grazing grounds, want of finance, non-compatibility to changing conditions of their indifferent and orthodox nature—can be rectified. An effort was made by the Baroda Government to solve this problem by the schemes of colonisation and settlement. It will be worthwhile to examine the details of the scheme.

COLONISATION AND SETTLEMENT SCHEMES

It was in 1938 that the Baroda Government after a long trial of repressive measures against the cattle breeders came to the conclusion that these restraining steps unaccompanied by ameliorative measures would not serve any purpose of improving the situation. Thus, in 1939, it started a scheme called the "Rabari Development Scheme" which was confined to Mehsana district alone.

The scheme was based on the following principles:—

(1) To reserve the available and suitable marginal or governmental waste lands as might be in existence from Mehsana district for the purpose of developing cattle breeding industry.

(2) To make such land available to the nomadic breeders for stabilising them free of any cost and at reduced rate of assessment.

(3) To improve and utilise such lands for the purpose of production of natural and cultivated fodders for maintenance and improvement of livestock.

(4) To supply the breeders free necessary initial equipment and finance to stabilise them and carry out prescribed programme of work.

(5) To arrange for instruction and guidance in carrying out prescribed programme of work.

In order to enable the breeders to take maximum advantage of available lands the scheme was divided into two parts. (1) Colonisation system and (2) Settlement system. The colonisation system was to be adopted where a minimum of 600 bighas of land in one consolidated block was available and the settlement system was adopted where available waste land was given in a scattered condition. Under the latter system, land was to be given to local rabaris of the village concerned and under the former rabaris from any part of the State were allowed to colonise permanently.

The ideal of the scheme, under either system is to enable the breeder to pursue and improve his profession by making necessary adjustments suiting to the prevailing conditions. It is interesting to examine how far the scheme has been put into operation and how far it has succeeded in achieving the objectives aimed at.

Progress of the Scheme

Without going into the examination of the historical development of the scheme year by year, it is desirable to study its present position and assess its achievements.

In the whole of the district there are at present two colonies—at Bellasar and Pratapnagar—and 22 settlements. The total number

of families settled by this scheme in the district comes to 352 with population of 1,863. The total area of land allotted to them comes to about 12,928 bighas. Out of this nearly 59% of area is, at present, under grazing and 41% is allotted to cropping. The following table gives a full consolidated picture of all settlements and colonies.

COLONIES AND SETTLEMENTS IN MEHSANA DISTRICT : 1952

1. Colonies	2
2. Settlements	22
3. Families settled	352
4. Population of families	1,863
5. Average size of the family	5.29
6. Total strength of cattle	3,063
(*i*) Bellasar colony..	176
(*ii*) Pratapnagar colony	99
(*iii*) Other settlements	2,788
7. Total land allotted	12,928 bighas
Colonies	2,275 bighas
Settlements	10,653 bighas

The colonists get their income from livestock products, the sale of young stock and from crops, part of which is sold against goods and part consumed. Compared to settlements, colonies are in a far better condition, because the area allotted and number of other facilities given in the colony are more. There are a number of problems connected with the economic and social life even in the settlements. Some of them are of vital importance and should be examined in greater detail.

Problems of Colonies and Settlements

The land allotted for settlements is government waste land. Many of the blocks are not even levelled. It would involve a lot of reclamation work before it can be put under the plan. The Rabaris, not having enough knowledge of agricultural technique find it difficult to till the land efficiently. They have not enough implements and experience. Moreover very few settlements have got irrigation facilities.

Hence the trouble of water scarcity does prevail. The spirit of hard work for agricultural occupation seems to be lacking sometimes. All these causes lead to a very poor yield of crops.

There are some other factors which have to be noted here. One is that, because of the peculiar indolent nature of Rabaris, they are found to be tempted to give land to outsiders for cultivation in some cases. Thus Rabaris try to become absentee landlords earning money without labour. The other is that of growing cash crops. It was found sometime back that many colonists and settlers were growing money crops like Isabgul, Linseed etc. If both these things continue, it remains to be seen whether the desired objective can be achieved. The land given for cultivation from the point of view of stabilising the nomadic breeder does not keep them on the land, if the first practice is allowed, nor does it serve the purpose of food and fodder if the second tendency continues.

How far the scheme has succeeded in stabilising Rabaris at one place and stopping trespassing on other people's crops also remains a problem which demands a detailed inquiry. The scheme seems to have only lessened the area of their roaming to a certain extent. During our field inquiry a veterinary doctor said that in the course of one of his visits to a certain settlement to innoculate the animals against rinderpest, he was surprised to find that not a single animal was there in the vicinity of settlement. In addition to this it is found in some cases, that animals other than cattle are also kept by the Rabaris. This proves to be an undesirable drain on the fodder supply of cattle and should be stopped as early as possible.

As to the other aspects, lack of co-operation among the settlers raises a number of other questions like that of finance, marketing of producer and consumer goods etc. Multipurpose societies in big colonies and settlements would serve a very good purpose: From the point of view of health, and education, Government has made no special arrangement for the residents. There are no facilities for education, nor good sanitation. Hence the achievement of the objective of cultural development of breeders is, it can be said, still very far away.

Benefits from Colonies and Settlements

Inspite of the above mentioned drawbacks and difficulties, and opposition from people other than Rabaris, who saw their ancient assumed privileges of utilising waste lands being usurped by others, the scheme has proved to be of definite benefit.

One of the outstanding advantages seems to be that the Rabaris, who are known to be nomadic since ages, have been converted to some extent to the idea of a settled and secured life, and some of them have

taken to work, against their indolent nature. To the extent that Rabaris are settled, it has reduced crop trespassing also, which is a great relief to the cultivating class.

As far as the aspect of breeding is concerned, it has served a useful purpose. Two main aspects of judging of improvement in the breed are milk yields and conformation. The recorded improvement in milk yield at the Bellasar colony for the last few years is as follows :—

Year	Yields in lbs.
1941	3
1945	4½
1950	5
1950-51	6
1951-52	6
1952-53	6

This records a rise of 200 per cent milk yield during a decade.

Improvement in conformation is not only better and bigger body development but the animals have majority of characteristics of true breed stocks. In general, it can be said that about 90% of animals of Bellasar colony show better body development and uniformity in representation of breed characteristics.

Under improvement of feeding conditions usually the items considered are (1) Pasture, (2) Fodder crops, and (3) Concentrates. The proceedings of the meeting of the Agricultural Development Board, Baroda, 1949, reveals that there has been about 200 per cent improvement in qualitative and quantitative growth of grasses. Rabaris in general do not feed concentrates to cows, nor do they have the means to do so ; but the colony Rabaris have taken to feeding of concentrates on an increasing scale, having learnt to appreciate the value of concentrate feeding.

The above information indicates that the scheme has definitely proved to be of positive good. It has helped in settling the nomadic race of Rabaris, reduced "Bhelan" and made noteworthy attempts at improving the quality of livestock. The efforts made by the Baroda Government are indicators of successful ways of tackling the problem. Now it lies with the Bombay Government to take it up as a full fledged campaign and prove its worth.

For this, an exhaustive survey of waste lands in the new talukas is desirable. According to the survey made during pre-merger time, there are at present 140 villages in the district with nearly 114,000 bighas of waste land which can be used for Rabari colonisation purpose. With the increase in number of settlements and colonies, co-operative societies for the purpose of cattle breeding, for purchase and sale and for various other aspects should be started. There should also be one union of these societies for the whole of the district. In addition to this a positive approach for the improvement of the standard of cattle in the settlement is also necessary. This can be done by way of (1) location of pedigree bulls (2) culling out useless stock (3) selecting better cattle for future breeding (4) improving cattle feed, and (5) improving cattle health by veterinary services.

Sheep Breeding and Production of Wool

There are two more aspects connected with the problem of livestock. One is the place of sheep breeding in the livestock development and production of wool and the second is the scope for the development of the dairy industry. The number of sheep and goats in the district is 1,04,509 and 1,69,758 respectively. Talukas like Patan, Sami, Santalpur and Radhanpur have got a higher density as compared to other regions. Most of the owners of sheep and goats are Rabaris not having enough land. They roam on the fields of others for pasture and they also constitute a menace to crops. As far as the problem of their efficient upkeep is concerned it is no way different from that discussed above in relation to bovines. What is important is the production of wool, the major product of sheep rearing.

At present the production is unorganised. The grading and standardisation of wool is also absent. But realising the necessity of organising the industry, the Baroda Government had started in 1942 a scheme of Sheep and Wool Industries, which aimed at the Sheep Breeding Farm combined with a laboratory. The purpose of the farm was to build up gradually by breeding and selection a pedigree flock of Patandale sheep and issuing pedigree rams for the improvement of shepherd flocks round about Patan. The Wool Analysis Laboratory was established as a natural corollary for testing the wools of different animals so as to ensure that only the best wool-bearing animals were retained in the flock and also that only superior wool-bearing rams were sent out to shepherds. The wool of the local flocks were also examined at the laboratory thus enabling select rams and ewes to be purchased for the farm from time to time as the occasion demanded.

The Indian Council of Agricultural Research was so greatly impressed by the work of this laboratory that they accepted the full responsibility for financing it for five years and the Baroda Government accepted the arrangement according to which this laboratory was to function upto 1950.

The development aspect of this industry *i.e.* the cleaning, shearing, grading and marketing of the wool produced was originally done departmentally on a limited scale, but as it developed, it became apparent that it would require a greater capital outlay and so the whole interests were transferred to the Indian Wool and Pastoral Development Company in 1945. It was intended at that time that the Company would expand its business to handle all the sheep of northern talukas of Mehsana district and the adjoining areas, an estimated number of 5 lakhs, and co-operate with the Government in the improvement of the wool, largely a matter of the best type of ram. Unfortunately the affairs of the company were not satisfactory and hence the Company had to be wound up and taken into liquidation.

In view of the accepted arrangement of financing the Wool Analysis Laboratory upto 1950, the Government was approached in 1947, for extension of the scheme, and accordingly the Sheep Breeding Farm had its sanction upto 1950. The Government in granting this sanction had remarked that the Commissioner for Agriculture and the Registrar of Co-operative Societies should confer and evolve some way to continue the work done by the former Company.

The progress of the Wool Analysis Laboratory was very promising in the years upto 1946-47, so much so that Indian Council of Agricultural Research Committees, while examining the annual report of that year have emphatically remarked that a comprehensive scheme on a large scale should be started in the Patan-Wadi tract. But, unfortunately, the progress of Sheep Breeding Farm has suffered much due to want of a suitable laboratory officer and good staff, and at present the farm is closed. There is a great scope for development of this branch of industry, and the natural resources available should be utilised to the utmost without delay.

Dairy Industry

With the production of milk of nearly 12 lakh lbs. per day in the district there is great scope and possibility for development of the dairy industry. At present there is no systematic organisation for the marketing of milk and milk products in the district. Adulteration of milk and ghee appears to be on the increase.

It is difficult to get the exact figures of milk utilisation of the district proper. But as the cows and buffaloes formed nearly 52 and

56% respectively of the total cows and buffaloes of Baroda State, we accept the pattern of milk utilisation of Baroda State for the district with all the reservations. According to the report on marketing of milk in the Indian Union 1950, the milk utilisation pattern in Baroda State was as follows :

UTILISATION OF MILK IN BARODA STATE : 1950

Fluid Milk	43.8
Ghee	46.8
Dahi	4.6
Butter	0.1
Khoa	3.7
Ice-cream	neg.
Cream	1.0
Total Milk	100.0
Total converted into products	56.2

The above figures show that more than 50% of milk is converted into various products. Nearly 46.8% of the milk produced is converted into Ghee. Mehsana has been very wellknown for its Ghee production. It is estimated that the total production of Ghee in Baroda State was nearly 240,000 maunds per year. Out of this, Mehsana contributed to the extent of 62%. Out of the total export of 20,000 maunds of Ghee from Baroda State, the share of Mehsana District was 81% ('Rural Baroda', p. 71). Thus the production and marketing of Ghee is an important item which requires more attention.

With a view to improving the quality of Ghee and securing better prices for it, the Baroda Government had opened Ghee Grading Centres in Mehsana district. But due to some difficulties regarding maintenance of laboratories etc., the scheme did not work well. But realising the important place of the milk industry in the economy of the region, the Baroda State had a scheme to develop the milk industry and to establish a central pedigree herd at a capital cost of Rs. 1,00,000 and recurring annual cost of Rs. 41,200. For the development of the industry, as well as for the fuller utilisation of the natural resources available, the scheme should be taken up by the Bombay Government. This scheme, along with the schemes of Rabari Colonisation and Settlement and Sheep Breeding and wool production if followed with all attention will do a good deal to improve not only the quality and quantity of livestock of the region, but help tremendously in the betterment of the economy of the district as a whole.

CHAPTER IX

MARKETING AND TRANSPORT

MARKETING

The problem of efficient marketing and its importance in the district of Mehsana where the great majority of the population depends on agriculture for living, need hardly be stressed. In any place of rural development, it has an important part to play and hence an analysis of the existing conditions of marketing in the district is necessary.

The important commodities for marketing in Mehsana district are cereals and pulses, cotton, oilseeds, Jiru, Variali and Isabgul etc. Among these, commodities like Castorseeds, Isabgul, Jiru and Variali have good markets in foreign countries. Isabgul is mainly exported to America, and the district is in a position to have all the monopolistic benefits, if its marketing is well organised. Jiru and Variali are also exported in large quantity outside the country. Cereals and pulses have markets in the district as well as outside. Tur dal, Mag, Math, Adad, Gram etc. are sent to various parts of Gujerat, Saurashtra, Uttar Pradesh, Madhya Bharat etc. Thus, the various commodities produced in the district have a good market both in and outside the country.

TYPE OF SELLERS

Before these commodities reach the final consumer, they pass through a number of hands. In Mehsana district the normal distribution work of agricultural commodities has been undertaken by three classes of traders. They can be divided into three groups : (1) Producers (2) Village Merchants (3) Market Merchants. The proportion of each at the few important market centres in the district is as follows :—

TABLE I

PROPORTION OF DIFFERENT TYPES OF SELLERS :1952

Markets	Producers	Village Merchants	Market Merchants
Harij	20%	60%	20%
Unjha	30%	50%	20%
Sidhpur	80%	10%	10%
Patan	45%	45%	10%
Kadi :			
Grains	70%	10%	20%
Cotton	20%	60%	20%

Source: District Marketing Office, Mehsana.

The above table reveals that there is not much uniformity in the pattern of the type of seller at various centres. While at Unjha village

TABLE II

FREQUENCY DISTRIBUTION OF VILLAGES ACCORDING TO DISTANCE FROM BAZAR BY TALUKA

Name of Taluka	Number of Villages with Market						
	Within the Village	Within two miles	Within 2 to 5 miles	Within 5 to 10 miles	10 miles and over	Distance not known	Total
1. Chanasma ..	5 (4.5)	27 (24.3)	58 (52.3)	21 (18.9)	—	—	111
2. Harij	—	2 (5.3)	8 (21.0)	25 (65.8)	3 (7.9)	—	38
3. Kadi	—	—	1 (0.8)	4 (3.5)	112 (94.1)	2 (1.6)	119
4. Kalol*	—	—	—	—	11 (12.0)	81 (88.0)	92
5. Kheralu** ..	—	3 (1.8)	2 (1.2)	1 (0.6)	—	158 (96.4)	164
6. Mehsana@ ..	—	2 (40.0)	—	—	3 (60.0)	—	5
7. Patan	2 (1.5)	15 (10.9)	53 (38.7)	58 (42.3)	9 (6.6)	—	137
8. Radhanpur***	1 (1.4)	—	23 (32.9)	39 (55.7)	4 (5.7)	3 (4.3)	70
9. Sami*** ..	No weekly bazars are held						
10. Santalpur*** ..	—	—	1 (1.3)	21 (28.0)	52 (69.4)	1 (1.3)	75
11. Sidhpur ..	3 (3.7)	7 (8.5)	24 (29.3)	12 (14.6)	3 (3.7)	33 (40.2)	82
12. Vijapur	19 (18.4)	36 (34.9)	42 (40.8)	6 (5.9)	—	—	103
13. Visnagar ..	—	3 (5.5)	23 (42.6)	28 (51.9)	—	—	54
Total ..	30	95	235	215	197	278	1050

Note : Figures in the brackets indicate percentage to the total.

Source : Census Tabulation Office, Bombay.

* There is no bazar in the Taluka. People go to Ahmedabad for marketing.

** Except for Vadnagar there is no bazar in the Taluka. Hence there is no entry n 158 villages.

@ There is no bazar in the Taluka. Mehsana and Ahmedabad are the only wo markets.

*** The nearest market for these talukas is Harij.

merchants are predominant, at Sidhpur producers are predominant. At Harij also village merchants form 60% of the sellers, while producers are only 20%. But it can be said that for the district as a whole the proportion of village merchants is very high. There are various reasons for the predominance of village merchants.

One of the reasons for the high percentage of produce sold in the villages is the poverty of the peasants. It was not possible to get the statistical data about rural indebtedness, but it was found during our field investigation that the cultivators are in debt to the village merchants, and they usually have to sell the crops to them. In cases where crops are not formally pledged, farmers are forced to dispose of their crops almost immediately after harvest in order to clear their debts to their respective creditors.

The second important factor which is responsible for the high percentage of village sales seems to be the unsatisfactory nature of communication with the nearest market. With bad roads, and no vehicle facilities, transport costs tend to become heavy. Moreover, we have seen that the number of carts and bullocks with the cultivator are also not sufficient to help him in transportation. In addition to this, the number of marketing centres in the district and their proximity to adjoining villages also affect the system. As the table showing the frequency distribution of villages according to taluka reveals, more than 50% of the villages are more than 5 miles away from the nearest village with a market. The situation in the talukas of Radhanpur, Sami and Santalpur is very bad.

Over and above the reasons stated, one of the outstanding reasons of the producer not taking his produce to the secondary market is his ignorance of market prices and dislike of the troubles into which they are dragged by 'arhatiyas', 'dalals' etc. at the market centres. The lack of proper understanding and absence of the spirit of enterprise to enter a market, in a way is responsible for their selling their produce to the merchants who come round the villages, or to the local baniyas.

System of Marketing

The methods of marketing agricultural produce prevalent in Mehsana district can be divided into two broad groups : (1) village sales and (2) market sales. It will be interesting to examine the two methods in detail and assess their economic significance from the point of view of efficient marketing.

Village Sales

Village merchants go to the interior villages at harvesting time and enter into transactions with the producers. Rates are fixed indivi-

dually by mutual consent. The producer, not being so very conversant with the prevailing prices, is often exploited by the village merchants.

The practice of weighing the goods in units of 10 seers with a hand scale is prevalent in most of the village sales all over the district. The weighment is done by the village 'tolat' who is paid by the buyers. This method induces 'tolats' to favour the buyers to a great extent, and it is estimated that nearly ¼ to ½ seer is appropriated by way of fraudulent weighment. In some places like Harij, delivery is made at the village only, while at other places like Patan etc., it is to be made at merchant's godown.

During weighment, it is customary to deduct ¼ seer per maund after filling up each bag of 5 local maunds (2½ B. Maunds). The deduction differs with different commodities at different places. Round about Unjha, it is customary to take ½ seer in case of Castorseeds, 1 seer in case of Till per maund. With Variali, Sarsav, Jiru, Isabgul, Methi, it is 2 seers per maund. Over and above this, in case of Jiru, Variali, etc. 'Labh' is demanded by the merchants. 'Labh' up to 2½ seers at the end of weighment is given to a merchant.

Besides these deductions during weighment, there are a number of other charges which the producer has to pay. These charges vary from place to place. From one to four annas per 100 rupees are charged from the sellers as Dharmada. Rs. 1-8-0 to 0-12-0 are charged as weighment charges. From one to two annas per bag of 5 maunds are taken as labour charges. At Vijapur, a further discount is demanded of Re. 1 to annas 8 per every 100 Rupees. After all these processes are over, 'Kadada' is made at the time of taking final delivery.

In village sales payment is not made immediately but after 12 to 15 days. If prompt payment is asked for, Re. 0-8-0 to 1-0-0 is deducted on every Rs. 100. Moneylending business always goes on side by side, with the rate of interest varying from 6% to 15% in many cases.

The above facts give a clear picture of poor bargaining conditions of the village producers. Their ignorance and backwardness is taken full advantage of and a number of deductions are made in cash as well as in kind before the transactions are over, and commodities are taken to town marketing centres. It is roughly estimated that the agriculturist is deprived of nearly 10 to 12% of the value of goods by various types of illegitimate allowances and fraudulent practices.

Market Sales

After the sales at village level are over, village merchants bring the goods to towns with bigger markets. The methods of sale and purchase at the marketing centres are different from those of village sales. After the opening of the market in the morning, the merchants

and commission agents gather at the market place. At Harij, Sidhpur, Patan and some other centres produce is sold by open auction. The highest bidder purchases the produce. No weighment is effected till the total arrival of the produce is sold by open auction. At Unjha the system of open auction is not prevalent. The commission agents take samples of goods from the village merchants and approach the wholesale merchants with samples. The wholesale merchants examine the quality and give the quotation of the prices to the commission agent under cover. Prices are not declared orally. No auction sale is effected at Unjha. It is noted that at Unjha, sometimes the commission agent, who has received a sample from the village merchant, sells the produce without the presence of village merchants.

After the sale is effected, either by open auction or by "under cover" method, weighment by beam scale takes place. As at the village sales, weighment is also paid for by the buyers.

During weighment at the market centres, a number of deductions are made. One to one and a half seer is appropriated from each Bengali Maund as custom. In case of condiments the deduction is of 2 seers. Moreover, if last seers are less than 2½ seers it is ignored and passed over to the buyers.

After the weighment is over, the payment takes place. If the village merchant demands cash payment a deduction of 4 annas is made per every 100 rupees. Generally payment is made after 10 to 15 days. The rate of interest on advances given during this time varies from 6 to 15%.

Before the final payment is made the following charges are deducted at the market centre also.

Commission charges	Re. 1 per Rs. 100
Dharmada	1 to 3 annas per cart
Panjrapole	1 to 3 annas per cart
Weighment charges	6 annas to 1 rupee per cart
Labour charges	1 to 4 annas per bag

A multiplicity of incidental marketing charges both at village level and at market level should be considered a serious and a characteristic drawback of the marketing system in Mehsana district. Middlemen's as well as commission agents' charges accompanied by the various types of levies mentioned above are responsible for increasing the price spread between the price that the producer receives and the price that the final consumer pays. If the market is regulated, the following benefits in cash and kind are expected to result.

Saving allowances in kind

1.	Loss due to fraudulent payment	5	seers per cart
2.	Refraction at an average due to the foreign elements	15	seers per cart
3.	Last seer ignored	2½	seers per cart
4.	½ seer extra per local maund	12½	seers per cart
5.	Namuna etc.	5	seers per cart
	Total	40	seers per cart

Saving allowances in cash

1.	Charity	Rs.	0-3-0	per cart
2.	Panjrapole	Rs.	0-2-0	per cart
3.	Labour Charges	Rs.	0-8-0	per cart
4.	Brokerage	Rs.	0-8-0	per cart
5.	Kadada	Rs.	5-0-0	per cart
	Total :	Rs.	6-5-0	per cart

Marketing of Cattle in Mehsana District

While discussing the marketing of agricultural commodities in Mehsana district, it will be appropriate to discuss the marketing of cattle also. The important centres from where cattle are marketed are Sidhpur, Patan, Mehsana and Visnagar. On a very rough estimate nearly 15 to 20 thousand animals including fresh and refreshed buffaloes, sheep and goats are exported every year from each of these centres. In the absence of available data, it was difficult to get exact figures for each centre, but on the whole the situation is not very different from the above estimate.

The majority of animals are sent out of the district, mainly towards Bombay. Among the type of sellers in the cattle market the proportion of breeders is very small. Village merchants form nearly 60% of the sellers. The predominance of village sales is therefore quite obvious, breeders are ignorant and do not know the benefit of market sales. Moreover, there is no regular market yard, or a place of resting and watering for the animals in these market centres. The breeders also seem to have realised these difficulties and hence they prefer to sell their stock to village merchants only. The village merchants who keep continuous contact with the market merchants go to breeders and strike bargains. The price of a buffalo is fixed on the basis of its milk yielding capacity, while that of sheep and goats on the basis

of their wool and flesh contents. Delivery is made to the merchant, who takes the animals to the marketing centres.

Payment to the seller is not made immediately. It is made after sometime. Advance business goes on side by side and the due amount is deducted from sale proceeds. There are no other charges such as charity, panjarapole etc. in this trade.

The season for marketing of buffaloes is uniform for the whole of the year with a tendency towards increase during the months from August to January. Marketing of sheep and goats is carried on all round the year with a peak period from September to December for sheep and from November to February for goats.

There are no separate places for cattle transaction at any of these centres. The market merchants possess some stables in which the animals are kept. Buffaloes are brought to these stables and milk yield test is taken by the buyers. The general consideration for fixing the price are the age, health, and appearance of the animals. The following market charges are deducted at the time of payment by the merchant.

1.	Commission charges.	Rs. 10	per buffalo
2.	Labour charges for keeping in stable, loading in wagons etc.	Rs. 2	per buffalo
3.	Maintenance charges for animal per day.	Rs. 5	per buffalo

In the above system of marketing of cattle it is clearly evident that the breeder is quite ignorant about the market prices and is open to all sorts of exploitation. The various charges made by the merchant are also high. As there is no auction sale, the competitive check is not in operation. It is desirable that cattle marketing in Mehsana be regulated. It will provide the benefit of open auction, stop unnecessary charges, provide for correct milk yield test and facilitate amenities like good market yard, water supply and medical aid for animals.

Future Markets

In a section on the system of marketing it is necessary to discuss the scope and extent of futures markets also. With the development of trade and extensions of markets, future markets have become an integral part of trade in various agricultural commodities. In Mehsana district there are a number of registered as well as unregistered associations dealing in future markets. The Baroda Government had stopped to some extent all future markets in Mehsana district, but after the merger they have revived and at present Castorseeds is the

main commodity in which future markets are dealing. Besides castor-seeds, commodities like Jiru, Variali, Isabgul, Sarsav, Pulses etc. are also items of future markets.

Trade Associations

Trading in futures is organised by associations of merchants. The number of such associations is nearly six in the district. Since some of the associations which deal in future business are not registered, it is not possible to give the exact number.

It may be noted here that the number of 'futures' exchanges in existence in the district are more than usual. In countries where future markets are regulated and controlled the number is very limited. For example, the United States of America had only 17 commodity exchanges, United Kingdom less than half a dozen and Argentina with its large export trade in grains and oilseeds only 2.

Method of Business

The by-laws of all the associations provide terms and conditions in which the business in 'futures' is to be carried on. The rules of business adopted by each association are not uniform. At this stage, it is not necessary to go into details about their by-laws, but it may be pointed out that a high degree of uniformity is desirable.

Mention may be made here of the transaction known as "Teji-Mandi" besides ordinary transactions. It is felt that the transactions carried out under "Teji-Mandi" are also very large. It has often tempted the agricultural producer to indulge in it against his own produce. The common belief is that the economic effects of "Teji-Mandi" on the conditions of agriculturists have proved to be highly ruinous. For factual verification, a detailed investigation is desirable.

FINANCE FOR MARKETING

The provision of necessary finance for moving the crops from the farm to the consumer is as important as any other function. Practically all the marketing functionaries engaged in assembling and distribution of agricultural produce, right from cultivators to village merchants and wholesale dealers etc. depend to a greater or lesser extent on outside finance to carry out their operations. The position of the cultivators who form the first link of the chain is financially by far the weakest and deserves special considerations.

The problem of agricultural finance, including the finance for marketing, in Mehsana district requires an exhaustive study by itself. In a general survey of this nature it was not possible to go into more detail on the topic. Hence the discussion that follows is based on the

scattered material available and impressions gathered during the field investigation of the district.

FINANCING OF CULTIVATORS

All over the district the village bania is the mainstay of the cultivator when the latter is in need of money. The extent of moneylending activity of the region is evident from the number of moneylenders registered in the first year of the application of the Moneylenders Act. In the whole of the district, 6,057 moneylenders, which was nearly equal to the number of moneylenders of all the districts of Bombay State put together, were registered, and they granted loans upto 41 lakhs to the non-traders. But thereafter, the number of registered moneylenders has declined to less than one-half. Thus the credit facilities have apparently shrunk.

The other source for credit is that of co-operative credit societies, and the purchase and the sale societies. But the extent of finances available from this source is not large. As it will be seen in the chapter on Co-operation, the co-operative movement has not made much headway in the district. In some cases, it is found that the management of village co-operative societies is in the hands of moneylenders themselves who finance the farmers. It was complained that in many cases a farmer is hardly given credit directly from the society. The moneylender takes the money from the society at a lower rate of interest and lends it to the farmer at a higher rate of interest thus profiting by the surplus at the cost of the co-operative society.

Apart from this general state of scarce credit facilities for the cultivator, it is apparent that the power of the majority of cultivators to withhold their stock from the market is comparatively low. The consequence is that they are forced to sell all the stock soon after the harvest. As a result they get a lower return. It is desirable that improved credit facilities should be afforded to cultivators at a reasonable cost to increase their power to withhold stock.

Ameliorative measures intended to control the moneylender, or to provide other cheap credit to the peasant may not by themselves produce any appreciable change in the condition of the peasant. The present position with regard to finance of agricultural operations, including finance for agricultural marketing, is not satisfactory. While co-operation is being encouraged by all the means possible, the progress made by the movement, in relation to the volume of operation to be tackled, has been small. This being so, we find that the moneylender has remained as predominant as he has always been.

The real anomaly of this fact is simple. While co-operation provides only the machinery of credit, no serious efforts appear to

have been made to render the farmer creditworthy. And in the absence of creditworthiness, no machinery of credit provision can possibly succeed.

The scope of co-operative credit and marketing facilities in the district is discussed in detail in the chapter on Co-operation.

Other Problems of Marketing

Warehousing : The methods and facilities for storing at present are highly inadequate. Most of the commodities are stored in gunny bags and some times even in heaps in rented godowns. The existing method is not at all satisfactory because of the great damage caused by rats, decay and leaky roofs. The percentage of loss involved in this method of storing is calculated by the district marketing officer as follows :—

Dryage	½ %
Weevil damage	1 %
Rat Infestation	1 %
Pilferage	1 %
Damage due to rain	1 %
Total :	4½ %

Weights and Measures : Defective weights, measures and scales affect proper agricultural marketing in Mehsana no less than the lack of storing and warehousing facilities. The practice of using hand scales at village markets and weighing in the unit of 10 seers afford ample opportunity for exploitation. The practice of beam scale at town markets also has got its own defects. The system of 41 to 43 lbs. a maund is common all over he district for certain commodities.

Grading and Standardisation : Adulteration of agricultural produce at almost all stages of marketing is another serious evil. The common forms of adulteration are, adding inferior quality grade to superior ones, mixing earth and stones with foodgrains and oilseeds in general, adding vanaspati and white oil to ghee. Some admixture of earth and stones to foodgrains and oilseeds is inevitable as it is difficult to remove them after final winnowing. But sometimes this is done deliberately. Sand is often mixed with Jiru and straw stalks with Variali. Mixing up of wheat of different varieties is also often evident. Adulteration in the matter of ghee is prevalent. Before merger, the Baroda State had introduced ghee grading at Visnager and Dhinoj and it was working satisfactorily, but due to fall in the arrival of ghee in the market and change in grading rules administration, grading was given up. The scheme failed to curb adulteration

in ghee. It is because of this deterioration due to adulteration that the ghee of Mehsana district once well known for its purity and quality has now lost its repute.

TRANSPORT AND COMMUNICATIONS

Transport

The importance of transport from the economic, military, administrative, cultural and social points of view needs no special emphasis. Efficient administration, famine relief, the growth of trade and industry, an effective exploitation of the resources of the country, and an even distribution of its population, all depend upon a good and efficient transport system for the region.

Railways

The railway facilities in Mehsana district are as follows :—

RAILWAY FACILITIES IN MEHSANA DISTRICT

1.	Railway Mileage	328 (Approximately)
2.	Area of the District	4,126 sq. miles.
	Population	1,471,662
4.	Miles of Railway per 1000 sq. miles	79.5
5.	Miles of Railway per 10,000 population	2.2

Source : Compiled from figures from District Census Handbook and P. W. D., Mehsana District.

Comparing these figures with those of the former Baroda State, and all India figures of 1947, the position is as follows :—

	Mehsana (1950)	Baroda (1939)	India (1947)	Europe (excluding Russia)
Miles of Rly. per 1000 sq. miles	79.5	116.9	27.9	114.4
Miles of Rly. per 10,000 persons	2.2	3.9	1.1	N.A.

Looking at the all India figures, the situation in Mehsana district is not bad. But one should not forget that the all India situation is not an ideal one. The table showing the frequency distribution of the distance between the village and the nearest railway station would help in understanding the situation.

PERCENTAGE OF VILLAGES TO TOTAL WITH RAILWAY STATION

District and Talukas	Within the village	Within two miles	Within 2 to 5 miles	Within 5 to 10 miles	10 miles and over	Distance not known	Total Number of Villages
	1	2	3	4	5	6	7
Mehsana District ..	3.9	19.3	34.3	22.1	17.2	3.2	1247
Chanasma	4.5	36.9	48.7	9.9	—	—	111
Kheralu	1.8	15.3	32.9	32.3	7.9	9.8	164
Visnagar	5.5	16.7	55.6	22.2	—	—	54
Mehsana	7.1	42.0	38.4	7.1	—	5.4	112
Radhanpur ..	—	—	—	4.3	91.4	4.3	70
Sidhpur	8.5	20.7	41.5	19.5	1.3	8.5	82
Santalpur	—	—	—	—	100.0	—	74
Patan	2.2	6.8	40.1	38.0	12.2	0.7	137
Sami	—	—	7.7	29.7	59.3	3.3	91
Kadi	2.5	24.4	44.6	26.0	0.8	1.7	119
Kalol	12.0	18.5	42.4	25.0	—	2.1	92
Vijapur	4.9	28.1	47.6	16.5	2.9	—	103
Harij	—	10.5	26.3	57.9	5.3	—	38

Source : Census Tabulation Office, Bombay.

The above table clearly indicates that talukas like Radhanpur, Santalpur, Sami and Harij seem to be greatly lacking in railway facilities. Even in talukas like Kheralu, Patan and Kadi, a very large number of villages are more than 6 miles away from the nearest railway station.

Looking to the size of the district, its trading activities and enormous potentialities of development, it is desirable that the railway mileage should be increased within the district, and important talukas linked with each other by a network of railways as early as possible. The suggestions given below may be considered in order of priority.

On the Mehsana-Taranga line of the district there is already a Railway Line from the Veretha Station to Timba known as Nathiger Quarry Siding. But the line has not been put into operation either for passengers or for goods traffic. If this line is extended to a further length of four miles upto Satlasna from Timba and kept open for passengers and goods, it will go a long way in developing the backward area popularly known as Gadhvada and it will open up the unexplored resources and products of the rich forests of Gadhvada area and the Banaskantha district. It may be pointed out here that the proposed site of the Sabarmati Irrigation Project Scheme at Dharoi is only about four miles from Satlasna and if Timba is linked with Dharoi, Government's problem of transporting materials for the construction of the dam at Dharoi would be very easily solved. It may also be pointed out that the earthwork between Timba and Satlasna has already been done. The whole proposition is so simple and cheap that Government's capital outlay on this line would be recovered within a very short time.

The former Government of Baroda State had planned and begun the construction of Vijapur-Ransipur Railway and the preliminary earthwork is already completed. But it has been postponed by the Government of India for reasons not known. Ransipur is famous for its china clay industry. The Railway Administration are sure to get sufficient traffic on this line. As this area is a part of Community Development Project, it may be taken on hand as early as possible.

The third proposition is that of linking up Sidhpur with Kakosi, only a distance of about six miles. From Patan a railway line exists upto Kakosi, and the construction of a further line of about six miles would open up the communications between Sidhpur and Patan on a very cheap basis and movement of goods from and to North India would be facilitated to such an extent that Government can get return for its investment within a very short time.

The fourth proposition is to link up Radhanpur either with Patan or with Harij. With the opening of the Deesa-Kandla Railway, passengers travelling from Ahmedabad or Mehsana to Radhanpur and Kandla

have to travel long distance via Palanpur and Deesa. If Radhanpur is linked up with either of the two places, much trouble and expense on the part of passengers will be saved. Several representations have been made on this point by the people of Patan and surrounding villages and we support the demand.

The fifth proposition is to join Bhildi with Vagdod on the Patan-Kakosi line. The Railway Ministry have already in contemplation a scheme to link up Raniwada on the Jodhpur Railway with Bhildi on Deesa-Kandla Railway. If Bhildi is linked up with this district on the nearest Railway Station *viz.*, Vagdod, a direct link between Ahmedabad and Jodhpur would be established and will help the development of both Gujerat and Rajasthan.

Finally there is the question of joining Taranga Hill with Udaipur. The Government of India is considering the feasibility of a Railway link between Gujerat and Rajasthan and our suggestion is that the shortest route that Government can have is Udaipur and Taranga Hill. If Government agree to establish this link, it will be a boon for the people of this district.

These are some of the suggestions for Railway links in this district. Mehsana is a very backward area as far as road-communication is concerned and hence the Railway is an important means of communication for this region. Thus, if the links suggested above are taken on hand, it will help immensely in the economic and social betterment of the community of the district.

Roads

The difficulties arising out of the lack of railway facilities can be very well mitigated to some extent if the region has a good net-work of roads.

The road condition in the district is very bad. The figure for the mileage of various types of roads given by the Public Works Department is 326 miles only. The following table gives a comparative position of the district as seen in relation to India.

ROAD MILEAGE IN MEHSANA DISTRICT

	Mehsana	India
Miles of Roads per 1000 sq. miles	79.0	196.4
Miles of Roads per 10,000 persons	2.2	7.4

It is apparent from the above table that the road facilities are very inadequate in the region. Viewing the fact in the background of the objective underlying the Nagpur Plan that no village in a well-developed agricultural area should remain more than five miles away from a main road, it seems that the situation here is very backward. Still more, the analysis of existing roads according to the nature of surface reveals a more unsatisfactory picture.

TYPES OF ROADS IN MEHSANA DISTRICT

State Highways	3 miles	Metal Roads	3 miles
Major District Roads ..	180 miles	Earthen Roads	314 miles
Other District Roads	143 miles	Gravel Roads	9 miles
Village Roads	—		
	326 miles		326 miles

Source : Public Works Department, Government of Bombay.

Most of the roads have an earthen surface. Hence during the rainy season their use has to be suspended for a considerably long time. Thus, during the monsoon period, the whole of the road transport has to undergo a virtual suspension.

The exact nature of prevailing conditions is depicted by R. B. Foote in his 'The Geology of Baroda State' and it will not be out of place here to quote him at some length.

"The opprobrium of want of roads, or disgracefully bad road applies to the whole of province of Gujarat more or less. . . . . The difficulty caused by the absence of road making materials in most parts seems to have induced a state of dispair and helpless acquiesence in the wretched state of roadlessness and sufficient efforts have not been made to remedy this great and crying evil. Many sources of splendid road material had not been opened up. . . . . they had not been sought for. . . . . The few railways that existed do but little to remedy the vast hindrance to general trafficking over the country generally, indeed, they only accentuate the acute want of means of easy travelling in the districts in which they do not exist." (pp. 104-105).

The question requires no further comment. The situation of road transport in Mehsana district demands immediate attention.

POST AND TELEGRAPH SERVICES

Communication is as important as transport for the development of any region. The volume of transactions made through the post and telegraph services often gives an index of economic activities. It also contributes by its services to the furtherance of the community's development in social, economic and cultural fields.

The table below shows the frequency distribution of distance between the nearest Post Office and villages in Mehsana district :—

PERCENTAGE OF VILLAGES IN TOTAL WITH POST OFFICE

District and Talukas	Within the villages	Within two miles	Within 2 to 5 miles	Within 5 to 10 miles	10 miles and over	Not known	Total
	1	2	3	4	5	6	7
Mehsana District ..	12.5	28.0	38.1	16.3	1.8	3.3	100 (1247)
Chanasma	10.8	24.3	55.0	9.0	—	0.9	100 (111)
Kheralu ..	9.2	32.3	43.3	8.5	—	6.7	100 (164)
Visnagar	14.8	38.9	44.4	1.9	—	—	100 (54)
Mehsana	17.8	42.8	26.7	8.7	—	4.0	100 (112)
Radhanpur ..	1.4	1.4	32.9	57.2	2.8	4.3	100 (70)
Sidhpur	17.1	30.5	32.9	11.0	1.2	7.3	100 (82)
Patan	11.0	25.5	47.5	16.0	—	—	100 (137)
Santalpur	2.7	9.3	41.3	38.7	6.6	1.4	100 (75)
Sami	5.5	9.9	23.1	42.8	15.4	3.3	100 (91)
Kadi	13.5	36.1	38.7	5.0	0.8	5.9	100 (119)
Kalol	21.7	32.6	35.9	5.4	—	4.4	100 (92)
Vijapur	26.2	43.7	28.2	1.9	—	—	100 (103)
Harij	2.6	13.2	39.5	44.7	—	—	100 (38)

Source : Census Tabulation Office, Bombay.

The above table shows that in talukas like Radhanpur, Santalpur, Sami and Harij most of the post offices are more than 5 miles away and the number of villages with post office within the village itself is very small. It is difficult to opine about the efficiency of runners' services provided by the post office, but it may be generalised that at least in these four districts the number of post offices seems to be very low.

With increase in the educational facilities, and development in various economic and social spheres, the need for more communication facilities increase. It is desirable that with progress in various aspects of life of the community, this important factor is also fully attended to and given due priority.

CHAPTER X

CO-OPERATION

The beginning of the co-operative movement in Mehsana district can be traced as far back as 1909-10. It was in that year that two small societies in two villages of Harij taluka were first started. In the year 1919 a separate Department of Co-operation was opened by the Government of Baroda. This gave a good impetus to the movement and by the end of the second decade 81 societies with 3,248 members were formed in the district.

From 1920 to 1940 progress has been slow but steady. Much was done during these two decades by the Baroda State Government to improve, enlarge and consolidate the movement. As a result of these efforts, there were 258 societies with 11,742 members in the district by the end of 1940.

Till 1940, the co-operative movement in the district was more or less confined to agricultural credit only. Moreover many of the societies were stagnant and uneconomic. It was during the war period that the co-operative movement got some encouragement again. The wartime controlled economy attracted many persons to form co-operative societies for the purpose of distribution and procurement of foodgrains and other articles. This incentive, in a way, helped some of the societies to stabilise and strengthen their financial structure. Large scale procurement and distribution was carried out by many societies and good profit was made.

In short, it can be said that during the pre-merger period, the co-operative movement had not progressed much. In comparison to other adjoining districts of Mehsana, the development of co-operative movement was not up to the standard. The co-operative finance touched a very small sector of agricultural requirements. The financial structure of societies on the whole was also very poor and the management was inefficient.

REASONS FOR SLOW GROWTH

Looking to the historical development of co-operation in the district, the progress does not appear to be rapid. During a long period of 40 years, only 177 agricultural and 79 non-agricultural societies were formed. The reasons for the slow growth of the movement are very obvious.

The co-operative department, it can be said, was rather small in size. The organisation and propaganda work in the district was poor compared to that of other districts of British India. The absence of a state co-operative bank (Appex Bank) was also in a way a handicap to the speedy growth of the movement. The District Central Bank had limited funds and in the absence of direct State aid it was often

difficult for it to advance loans to all the societies. In short, there was no strong co-operative banking structure which could finance all good societies with sufficient amounts so that the latter could grant adequate loans to member agriculturists.

Moreover, many of the societies were formed on the basis of unlimited liability. Hence, the poor agriculturists hesitated to stake their fortunes by associating themselves with the society. The rich also showed their unwillingness to join the Society as there was unlimited liability. The rate of interest charged by the societies was also as high as 9 to 10 per cent. There was no public enthusiasm or initiative. The lack of adequate inspection and supervision and absence of annual audit, as properly understood, had weakened the movement.

THE PRESENT SITUATION

After the merger of Baroda State territories with Bombay State in 1948-49, attempts of the co-operative department have been directed towards reorganisation of the old societies on Bombay lines. Efforts are being made to revive the stagnant societies, to weed out the bad societies and to encourage and organise multipurpose societies.

During the last four years, especially after the merger, the co-operative movement has made satisfactory progress. The following table shows the position.

TABLE I

CO-OPERATION IN MEHSANA DISTRICT

Year	No. of Societies	Total Members	Working Capital Rs.
1949-50	361	34,332	46.7 lakhs
1950-51	403	45,201	57.4 ,,
1951-52	407	59,130	66.6 ,,
1952-53 (March)	418	47,353*	74.33 ,,

Source : Assistant Registrar of Co-operative Societies, Mehsana District.

* (The fall in membership in 1952-53 is because of a probable inflated figure for the previous year).

GEOGRAPHICAL DISTRIBUTION

The co-operative movement is not evenly spread in all the talukas of the district. The following table shows the number of co-operative societies in the talukas.

TABLE II

SPREAD OF CO-OPERATION IN MEHSANA DISTRICT

Taluka	No. of Co-operative Societies
Chanasma	64
Vijapur	60
Mehsana	59
Kadi	54
Kalol	41
Sidhpur	34
Visnagar	30
Patan	30
Kheralu	23
Radhanpur	6
Sami	4
Harij	2
Santalpur	—

Source : Assistant Registrar of Co-operative Societies, Mehsana District.

The above table indicates that the areas of development of co-operation can be divided into three parts. (1) The first five talukas in the table are well-developed compared to other parts of the district (2) Sidhpur, Patan, Visnagar and Kheralu can be grouped together as under-developed areas while (3) Radhanpur, Sami, Harij and Santalpur would form a group as undeveloped areas.

The reasons for this uneven development in the district are obvious. The third group is undeveloped because Sami, Santalpur and Radhanpur were parts of former Palanpur and Radhanpur States, where no efforts to encourage co-operative movement were made. Moreover the economic condition of the talukas also was not so good. The quality of soil, and average rainfall are very poor. The literacy level among the people of these areas is very low. The regions in the second group are slightly better in the matter of quality of soil and average rainfall, while the first group is far better when compared to all other talukas in every respect.

Agricultural Credit Societies

Agricultural credit societies constitute a major sector of the co-operative economy in the district. The first agricultural credit society was started in 1909 in Harij taluka. By 1920, there were nearly 63 agricultural credit societies working in the district. In 1948-49, there were 160 agricultural credit societies. Almost all of them were unlimited and had small subscribed capital. Their loan operations were also small and many of them were not working properly.

Present Position

There has been good progress in the number of members of societies after the merger of the district in Bombay State. The following table reveals the situation.

TABLE III

PROGRESS OF AGRICULTURAL CREDIT SOCIETIES IN MEHSANA DISTRICT

Year	No of Societies	Members
1949-50	184	19,556
1950-51	206	13,942
1951-52	219	17,881
1952-53	226	18,728

Source : Assistant Registrar of Co-operative Societies, Mehsana District.

During the four years more than 100 societies have come into existence. Most of the new societies are multipurpose societies. The latest position *i.e.* in March 1953, is that there are in all 226 agricultural credit and multipurpose societies, with a membership of 18,728 all over the district. Assuming that one member represents a family of five persons, the percentage of population covered by agricultural credit societies comes to 8 per cent only. The following table shows the stage of development in comparison to that of other districts of Gujerat.

TABLE IV

PROGRESS OF CO-OPERATION IN GUJERAT : 1950-51

District	Total No. of members of Societies	Rural population	Average membership per Society	Percentage of membership to rural population
Ahmedabad	20,399	6,89,445	86	2.9
Amreli	6,108	2,30,767	44	2.6
Mehsana	13,949	11,48,431	67	1.2
Banaskantha ..	3,079	69,954	88	0.4
Kaira	20,605	11,56,891	82	1.7
Sabarkantha	6,263	6,35,005	96	0.9
Baroda	17,317	8,97,528	48	1.9
Broach	17,226	5,77,030	70	2.9
Panch-mahal ..	22,707	10,11,285	56	2.2
Surat	54,342	14,39,191	117	3.7
Bombay State ..	1,81,995	84,57,527	67	2.1

Source : Annual Administration Report on the working of the Co-operative Societies in the Bombay State for the year 1950-51.

The average membership per society in Mehsana district is low *i.e.* only 67 persons, while that in Surat is 117, Sabarkantha 96, Banaskantha 88 and Ahmedabad 86. The average membership in Mehsana

equals the average membership for the whole of Gujerat. It shows that the movement has not attracted the rural folk to the extent it has done in other districts. This backwardness may be perhaps due to the recent inclusion of highly underdeveloped areas of Radhanpur, Sami and Santalpur in the district at the time of merger. Among different administrative divisions of Mehsana district, talukas like Chanasma and Vijapur have more than 30 per cent of villages covered by the credit societies while Harij, Radhanpur, Sami and Santalpur have less than 5 per cent of the villages covered by the societies. The development of credit societies is unbalanced for the same reasons stated before.

FINANCIAL STRUCTURE

The pattern of the agricultural credit societies in Mehsana reveals that though the principle of unlimited liability is generally retained, the principle of limited liability has also been accepted. Out of the 219 agricultural credit societies, 103 are based on unlimited liability, while the rest are based on limited liability.

Working Capital

The structure of working capital of agricultural credit societies on the whole in Mehsana district is as follows.

TABLE V

WORKING CAPITAL OF AGRICULTURAL CREDIT SOCIETIES IN MEHSANA DISTRICT

	1949-50 Rs.	Percentage	1950-51 Rs.	Percentage	1951-52 Rs.	Percentage
Owned Capital*	4,35,677	36.8	6,68,449	44.3	9,50,470	47.9
Deposits (Members and Non-Members) ..	3,89,367	34.6	4,82,076	32.0	5,61,703	28.2
Other Borrowings	3,56,657	30.1	3,55,064	23.6	4,70,861	23.7
Working Capital	11,81,701	100	15,05,589	100	19,83,034	100

* Owned capital includes share capital, reserve funds and other funds.

Source : Assistant Registrar of Co-operative Societies, Mehsana District.

TABLE VI

PROGRESS OF AGRICULTURAL CREDIT SOCIETIES IN THE DISTRICTS OF GUJERAT : 1950-51

(Amount in rupees)

District	No. of Societies	Average owned capital*	Average Deposit		Other borrowings (average)	Working capital (average)	Fresh Advances (average)	Average working capital (per member)
			Members	Non-Members				
1 Ahmedabad ..	237	7858.1	528.3	770.4	6425.5	15582.5	14338.0	181.4
2 Amreli ..	139	2964.8	430.7	647.6	5100.3	9143.8	5812.8	208.7
3 Mehsana	206	3244.8	1434.6	905.0	1723.6	5609.1	1711.0	107.9
4 Banaskantha ..	35	2861.2	457.4	408.1	854.6	4581.4	1797.6	52.0
5 Kaira ..	251	5462.5	984.6	742.1	1074.8	8264.2	1965.1	100.6
6 Sabarkantha ..	65	5778.5	1923.4	2527.8	2224.9	12454.8	6095.3	129.3
7 Baroda	359	3278.9	1808.7	1005.6	1574.8	7668.2	3841.2	158.9
8 Broach	246	9306.9	3475.1	912.4	9986.9	23681.4	15875.8	338.2
9 Panch Mahal ..	406	2143.6	334.6	654.8	1960.4	5093.4	2454.0	91.7
10 Surat ..	463	6185.8	236.3	1878.6	7230.3	17658.4	6301.7	150.4
Total ..	2407	4981.6	1087.7	1057.3	4236.3	11656.9	6111.5	151.8

* Owned capital includes share capital, reserve funds and other funds.

Source : Assistant Registrar of Co-operative Societies, Mehsana District.

It may be observed from the above table that the proportion of deposits from members as well as non-members to the working capital is fairly high. As the figures in table 6 reveal, the larger proportion of these deposits come from the members themselves. This may mean that a certain proportion of the members is in a fairly good financial position and has surplus money to deposit. This is a very good feature in the financial structure, because it means that the strength of the societies is built up from the members themselves and they have not to rely upon outside borrowings. The low percentage of outside borrowings shows this very clearly.

To have a clear idea of the condition of agricultural credit co-operation, it will be worthwhile to study it in comparison with that of other districts of Gujerat. Table 6 indicates the condition of primary societies in each district of Gujerat.

The table reveals that the average working capital per member in Mehsana district is only Rs. 107. Compared to that of other districts like Broach which is 338, Amreli which is 208 and Ahmedabad which is 181, it is very low. Comparing the extent of average deposits and the proportion thereof of members to that of non-members, it is to be noted that the average deposit from members in Mehsana district is higher than that of non-members. The amount of other borrowings is considerably low compared to Ahmedabad, Amreli and Surat districts.

TABLE VII

PURPOSE OF LOANS ADVANCED BY THE AGRICULTURAL CREDIT SOCIETIES

Objects	Amount in rupees					
	1949-50	Percentage to total amount	1950-51	Percentage to total amount	1951-52	Percentage to total amount
Leases, assessment and current agricultural expenses ..	2,17,838	70.6	1,17,302	34.8	3,20,944	75.6
Maintenance of family ..	20,800	6.7	67,896	20.1	37,473	8.8
Land improvement	9,649	3.1	73,735	21.8	10,335	2.4
Marriage and other special functions	10,002	3.2	29,857	8.8	3,610	0.8
Repayment of old debts ..	—	—	—	—	3,725	0.9
Industrial production	—	—	—	—	750	0.1
Marketing and processing ..	1,300	0.4	—	—	4,600	1.0
Purchase of land	—	—	—	—	5,690	1.3
Other purposes	48,693	16.0	47,977	14.5	36,972	9.1
Grand Total ..	3,08,282	100.0	3,36,767	100.0	4,24,099	100.0

Source : Assistant Registrar of Co-operative Societies, Mehsana District.

CREDIT FROM SOCIETIES

The societies at present confine their business to short-term and intermediate-term loans only. The figures in table 7 show the amount of loans advanced for various purposes for the last three years. Most of the loans are advanced for carrying out current agricultural expenses, including payment of rent and assessment. Next in importance are the loans advanced for the purpose of land improvement. It may be noted that the above analysis is based on the recorded information, and it is just possible that in some cases loans taken for productive purposes are utilised for some other purpose. The amount of loans given in the year 1951-52 shows that nearly 20 per cent of the total amount of loan was given for maintenance of family and marriage and other special functions. The reason for such a high proportion of the amount given for such purposes is that the year was a famine year.

Security of Credit

The table below gives information regarding the extent of loans that are repaid, the amount of loans outstanding and the amount that is overdue.

TABLE VIII

LOAN TRANSACTIONS OF CREDIT SOCIETIES

	1949-50 Rs.	1950-51 Rs.	1951-52 Rs.
Loans Advanced	2,83,994	3,52,480	4,24,099
Loans Repaid	1,95,941	3,05,768	2,69,621
Loans Outstanding	4,93,290	5,43,989	6,96,621
Loans Overdue	1,14,340	1,66,245	3,13,174
Percentage of Overdues to loans outstanding	23.1%	30.5%	44.9%

Source : Assistant Registrar of Co-operative Societies, Mehsana District.

It is evident from the figures above that a considerable amount of loans remain overdue. Along with the gradual increase in the total amount of loans advanced there has been an increase in the percentage of overdues to loans outstanding. This means that a good amount of loans given to the members is not repaid by them due to some reason or the other. The phenomenal increase in overdues in 1951-52 may be due to the fact that the previous year was a famine year and a considerable amount of loan was given for family maintenance and other unproductive purposes.

But apart from this special reason, the gradual increase in overdues should be taken serious note of. It may be that the members are heavily indebted and their low productive capacity does not help them to overcome the deficit in any way. It is also felt that the moneylenders are reluctant to advance loans to cultivators because of the Bombay Agricultural Debt Relief Act and the Bombay Tenancy and Agricultural Lands Act. Under the provision of the latter enactment, non-agriculturists are not allowed to acquire cultivator's land in lieu of their debt. Thus, such of the members of co-operative societies as are not able to cover both their yearly expenditure and payment of dues to societies are forced to hold back the dues to societies.

The management of the societies is also to be blamed to some extent. It is reported that the influential members of the societies borrow heavily and are indifferent towards repayment in time. Their example is followed by other members also and consequently overdues go on increasing. It is also found that many times moneylenders themselves participate in the promotion and management of societies. They get the loans advanced to the members who are their debtors and thus recover their old dues which are otherwise as good as bad debts. Thus personal benefit is obtained at the cost of all members and the society is left to its own fate.

Co-operative credit demands a reasonable level of income to agriculturists, stability of agricultural prices and production, and a fairly high level of literacy. As far as Mehsana district is concerned, agricultural production depends upon rainfall which is highly uncertain. Literacy in rural areas is not high. Hence it is desirable that a constant watch over the movement of the amount of overdues should be kept, otherwise the co-operative movement may be adversely affected.

Cost of Credit

The cost of management of agricultural credit societies in Mehsana district was Rs. 1,73,837 in the year 1950-51. This forms nearly 11.5 per cent of the total working capital. The cost of management of the primary societies in Bombay State in 1950-51 was 5.6 per cent of the working capital only. Compared to this, the cost of management is very high in Mehsana district.

Audit Classification

The efficiency of management and the quality of working of the societies can be known by referring to the audit classification. The table following on the next page shows the audit classification of agricultural credit societies in Mehsana district in the year 1951-52.

TABLE IX

AUDIT CLASSIFICATION OF CREDIT SOCIETIES

Audit Class	No. of Societies	Percentage to total
A	7	3
B	69	32
C	99	46
D	37	16
Not classed	7	3

Source : Assistant Registrar of Co-operative Societies, Mehsana District.

Adequacy of Finance

In the absence of an exhaustive and detailed investigation of credit problems of the rural regions and the role of co-operative finance, it is difficult to assess what part the co-operative finance forms in the total needs. Some of the members of the agricultural credit societies and the officials of the department of co-operation who were contacted during the field work expressed the view that co-operative finance advanced at present was inadequate with reference to the total demand.

A comparative study with other districts of Gujerat would give some idea as to the amount of credit advanced by the primary societies in Mehsana district.

TABLE X

ADVANCES BY PRIMARY SOCIETIES : 1950-51

District	Average fresh advance by a Society Rs.	Average fresh advance per member Rs.	Average working capital per member Rs.
Ahmedabad	14,338	166	181
Amreli	5,812	132	208
Mehsana	1,711	25	107
Banaskantha	1,797	20	52
Kaira	1,965	23	100
Sabarkantha	6,095	63	129
Baroda	38,412	79	158
Broach	15,875	226	338
Pancha Mahal	2,454	42	91
Surat	6,301	53	150
Total	6,111	83	151

Source : Compiled from the Annual Report of the Registrar of Co-operative Societies, 1950-51.

It is observed that, while members of primaries borrowed, on an average, Rs. 226 in Broach and Rs. 166 in Ahmedabad, they borrowed only Rs. 25 in Mehsana. Thus the advances given by the societies to the members are very small, even far below the average of the Gujerat region as a whole. Looking to the working capital per member and the credit given per member in Mehsana district, it is found that the ratio is 1 to 4. This may be interpreted to mean that the societies are not functioning well and are not advancing loans to the needy or that the credit-worthiness of the member is so low that more loans cannot be extended. The whole question requires a thorough examination. It is possible that the low credit-worthiness of the needy member and lack of efficient management on the part of societies may be the reasons for this state of affairs.

Problem of Co-operative Finance

The problem of rural finance has remained one of the very important problems to be dealt with in any plan of rural development. With the implementation of the Moneylenders Act and Agricultural Debtors Relief Act the problem has become more acute. In the first year of the application of the Moneylenders Act, nearly 65,000 moneylenders had sought registration, the number being as high as that of all the districts of Bombay put together. In the year 1951-52 the number dwindled down to 2,000 only. With such a precipitous decline in the number of moneylenders and in the absence of other types of credit facilities, the problem of agricultural finance demands serious consideration.

Mehsana District Central Bank

It was in 1917 that the Baroda Government first opened a Central Bank in Mehsana district. Since then it has been expanding its activities very gradually throughout the district.

Upto 1940 the bank had not made much progress. It used to advance medium term loans to societies in small amounts. The absence of an apex bank to obtain funds and its failure to mobilise private deposits in large amounts, restricted the activity of the central bank and thwarted to some extent the progress of co-operation in the district.

During the last war, the bank took up the work of procurement and distribution of food-grains. Good financial assistance was rendered by the Baroda Government for this purpose. The work brought in good profit to the bank and helped it to attain financial soundness. However upto the merger, its loan policy remained conservative and was not conducive to the rapid progress of the movement.

After the merger it has assumed a new role. It has commenced banking business and is accepting current deposits. It is also granting cash-credit loans to societies. It has opened branches at Kalol and Chanasma since last three years and is making efforts to expand its activities. In 1950-51 it had a membership of 202 societies and 204 individuals.

Working Capital

In the year 1950-51, the working capital of the Mehsana District Central Bank stood at Rs. 14,79,971. The working capital consisted of 6 lakhs of owned capital, 6 lakhs of deposits and 1 lakh of borrowed funds. It will be worthwhile to compare the same with that of other district banks of Gujerat.

TABLE XI

COMPOSITION OF WORKING CAPITAL : 1950-51

District	Owned Capital Rs.	Total Capital Rs.	Borrowings Rs.	Working Capital Rs.
Mehsana	6,82,048	6,97,923	1,00,000	14,79,971
Ahmedabad ..	5,17,536	54,73,534	—	59,91,070
Surat	26,57,982	2,21,06,841	5,93,300	2,53,58,213
Panch Mahals ..	2,17,483	7,82,775	2,15,569	17,78,352
Broach	10,95,838	70,41,097	3,51,771	84,88,706
Baroda	4,14,413	21,97,351	—	26,11,764
Kaira	4,67,214	33,40,171	—	38,07,379

Source : Annual Administration Report, Co-operative Societies of Bombay, 1950-51.

It may be observed from the above table that the Mehsana District Central Bank has the smallest working capital as compared to all other districts of Gujerat. Compared to Surat and Broach the amount of owned capital is also very small. The volume of deposits form a good proportion in the working capital of the Central Bank of Mehsana District. But looking to the amount of deposits in Ahmedabad, Surat, Broach, Baroda and Kaira, the amount in Mehsana is very small. This may be explained by the fact that the Bank did not accept current and savings deposits.

LOAN OPERATIONS

The main function of the Central Bank is to cater to the financial needs of the primary societies. The bulk of loan transactions of the Central Bank is with the agricultural credit societies which constitute the major group of societies. Loans are also advanced to individuals who come to be associated with banks not only as depositors but also as borrowers. The following table gives the average fresh advances made per individual and per society by the Central Banks in various districts of Gujerat.

TABLE XII

ADVANCES BY CENTRAL BANKS DURING 1950-51.

District	Advanced per individual Rs.	Advanced per society Rs.
Broach	43.58	36,647
Baroda	21.1	4,434
Kaira	4.8	43,613
Mehsana	7.4	1,937
Ahmedabad	27.7	41,002
Amreli	42.0	15,234
Surat	1231.7	73,217

Compiled from Annual Report—1950-51.

The figures given above reveal a very significant fact. The amount of advances made by the Central Bank in Mehsana district per individual and per society is the smallest compared to all other districts in Gujerat. While districts like Surat, Ahmedabad, Kaira and Broach make advances to the extent of Rs. 40,000 per society, in Mehsana the average of such advances comes hardly to Rs. 1 to 2 thousand. The same is the fact in the case of advances of loans per individual.

Along with the advances, it will be interesting to analyse the figures of loans outstanding and loans that are overdue. Table 13 gives district-wise information of the same for the Gujerat region.

TABLE XIII

LOAN TRANSACTIONS IN THE DISTRICTS OF GUJERAT : 1950-51

District	Loans outstanding Amount in Rs.		Loans overdue Amount in Rs.		Percentage of overdues to loans outstanding	
	Individual	Societies	Individual	Societies	Individual	Societies
Ahmedabad ..	2,557	15,16,774	2,169	57,700	84.9	3.7
Amreli	20,637	1,47,761	37	4,932	0.17	3.3
Mehsana ..	11,145	4,50,041	10,145	1,57,957	91.0	35.1
Kaira	2,456	18,94,463	—	—	—	—
Baroda	3,97,123	4,64,390	45,459	1,00,525	11.4	21.6
Broach ..	1,41,290	29,57,165	1,352	17,026	0.95	0.57
Surat	18,11,367	94,85,598	40,231	34,483	2.2	0.34

Source : Annual Report of the Registrar of Co-operative Societies, Bombay

The amount of overdues both in the case of individuals as well as societies are 91 per cent and 35 per cent respectively in Mehsana district. Compared to those of other districts, the overdues are very high in the district. This high percentage of overdues may be explained by the fact that the year 1950-51 was a famine year. But even during the previous year 1949-50, which was not a famine year, the percentage of dues to total loans outstanding was 37 per cent.

The above discussion brings out clearly that the working capital of the Central Bank is smaller than that of other districts and its loan operations are far below normal. The high percentage of overdues suggests that the credit-worthiness and repaying capacity of the members and societies are very low. We have seen that more than 50 per cent of the societies fall in the 'C' and 'D' group of audit classification. This financial difficulty as well as the lack of efficient management of primary societies seem also to be responsible for the limitations of the scope for the activities of the Central Bank. Under these circumstances, it is desirable that the Central Bank should engage qualified inspectors to look into the conditions of indebted societies and to work for the timely recoveries of loans. Moreover the Central Bank had taken up the work of the distribution of controlled commodities and has locked up finances to the extent of Rs. 2 to 3 lakhs. This is outside the work of central financing agencies and is not desirable.

AGRICULTURAL NON-CREDIT SOCIETIES

The table below shows the progress made by the agricultural non-credit societies in recent years in Mehsana district.

TABLE XIV

PROGRESS OF AGRICULTURAL NON-CREDIT SOCIETIES

Year	No. of Societies	No. of Members	Working Capital Rs.
1949-50	38	4,657	11,27,307
1950-51	45	11,867	13,68,460
1951-52	45	15,289	16,49,791
1952-53	48	—	—

Source : Assistant Registrar of Co-operative Societies, Mehsana District.

It may be observed from the above table that there has been considerable progress in the number of societies as well as membership and working capital during the last four years. The non-credit agricultural societies consist of the following different types of societies.

TABLE XV

AGRICULTURAL NON-CREDIT SOCIETIES IN MEHSANA DISTRICT

	Type	Number
1	Lift irrigation societies	18
2	Taluka purchase and sale unions	11
3	Rural consumers' stores	5
4	Taluka development boards	9
5	Farming societies	2
6	Milk society	1
7	Cattle breeding society	1
8	Purchase and Sale Society (Potato only) ..	1
	Total ..	48

Source : Assistant Registrar of Co-operative Societies, Mehsana District.

Lift Irrigation Societies

With a view to intensifying the "Grow More Food" Campaign and to step up production of food crops, Government has started encouraging irrigation societies. Some multipurpose societies also have started taking benefit of the scheme. In a district like Mehsana, where irrigation is so poor and rainfall so uncertain, the increasing importance of forming such societies need hardly be emphasised.

During the last four years nearly 16 societies have been organised. These societies are a little expensive but are found to be highly useful and attractive to the farmers. Out of the 18 societies, 7 are situated in Vijapur taluka. These societies have brought more than 25,000 bighas of land under irrigation. Besides these, five multipurpose societies are also doing lift irrigation work and supply water to nearly 1,000 bighas of land.

Taluka Purchase and Sale Unions

Most of these unions are distributing controlled commodities. In practice, their main function should be marketing of agricultural produce but very few of them are doing this work. In a district like Mehsana, where agricultural production is so predominant, marketing on co-operative lines is highly desirable. From this point of view the movement has not made much headway.

The main reason for the absence of a good co-operative marketing movement is the ignorance and backwardness of the agriculturists. They are unaware of the benefits that would accrue to them by making use of the co-operative system of marketing. Moreover, the development of co-operative marketing is closely bound up with the problem of credit. The claims of the moneylenders and the village merchants inhibit the cultivator's freedom of action in disposing of his crop. Another hindrance is the lack of storage facilities. Absence of trained and efficient hands for the running of marketing societies also work as an impediment difficult to overcome. Opposition by vested interests such as merchants has also been responsible for this progress.

However, it should be mentioned that some of the unions have exploited the opportunity to their best and accumulated good funds in dealings of controlled commodities. Some of them promise well to prosper even in a decontrolled economy. However, it is desirable that they gradually switch over to their legitimate functions. The same is the case with rural consumers' stores, which came up as 'war babies'. It is doubtful how many of them will continue as soon as the controls are removed.

Before closing this discussion, mention should be made of the commendable work done by the Kadi Taluka Purchase and Sale Union

Ltd., in the supply of sugar and other commodities as well as retail distribution of other articles. In addition to this the Union is running a Motor Transport Service on the Kalol-Kadi route. The route is 12 miles long and its wear and tear is being looked after by the Union. It has also obtained tube-well boring equipment and has successfully carried out boring of 10 tube-wells in the district. Mention should also be made of Vadnagar Sahakari Purchase and Sale Sangh which is maintaining a boring machine and has also done good work.

Taluka Development Boards

The main object of the taluka development board is to carry on propaganda for the adoption of improved seeds, improved implements and manures. The taluka development board is no doubt an unique feature of agricultural co-operation in Bombay State.

In Mehsana district, there are at present taluka development boards. It is reported that no noticeable work is being done by them. The main handicap is the paucity of funds and non-availability of trained and enthusiastic hands. The extensive area of operation is also a drawback in the execution of various activities of the Board. A close link with the agricultural societies in the villages of the talukas is necessary to make them more effective.

Agricultural Improvement Societies

In Mehsana district there are no co-operative societies for land improvement, fencing, crop protection, supply of manures, seeds, implements etc. There is one cattle breeding and one milk supplying society. But they are more or less dormant.

There are two co-operative farming societies (joint tenant and collective farming type) registered in the district. The Rantej Pioneer Co-operative Joint-Farming Society at Rantej, in Chanasma taluka, has 12 members and a working capital of Rs. 65,262. The value of farm equipment owned by the society comes to Rs. 33,644. The total area covered by the farm comes to 300 bighas of jirayat land. The whole plot is a consolidated one. The second society is that of Gokulpura Ganotia Kheti Sangh in Radhanpur taluka. It has 35 members and the total area covered by the Sangh is 573 bighas of land. None of these societies have done any appreciable work worth mentioning.

Provision of Long-term Finance

The Bombay Provincial Co-operative Land Mortgage Bank Ltd., registered under the Bombay Co-operative Societies Act of 1925 in the year 1935, has at present 19 primary banks affiliated to it in

different districts of the Bombay State. Partly subsidised by the Government, it has employed three Land Development Officers at (1) Kolhapur (2) Ahmednagar and (3) Mehsana, to scrutinise loan applications from the districts which are not served by the primary affiliated banks.

The loans advanced by the Land Development Officer in Mehsana district for purchase of oil engines and pumps, sinking wells, land improvements and for redemption of debts mostly incurred for land improvement or for agricultural expenses have been detailed below for the years 1951-52 and 1952-53.

District	No. of talukas	No. of villages	No. of borrowers	Amount of loans Rs.
Mehsana ..	5	7	15	70,000

Demands of loans for land improvement and purchase of agricultural machinery are increasing in the district and loans are being sanctioned after a detailed scrutiny of applications and conditions laid down by the Bank.

Much still remains to be done in the matter of provision of long-term finance in the district. The activities of the Land Development Officer should cover a wider area (in view of the fact that the demand for loans for land improvement is increasing) and the staff needs to be expanded if it is to be adequate to cope up with the work in the district.

Non-Agricultural Credit Societies

The progress of non-agricultural credit societies in Mehsana district in the last three years is as follows.

	1949-50	1950-51	1951-52
No. of Societies	24	22	21
No. of Members	7,534	7,978	9,066
Percentage of Membership to Urban Population	2.3	2.4	2.8

Source : Assistant Registrar of Co-operative Societies, Mehsana District.

The above statement reveals that the progress of non-agricultural credit societies has not been rapid in Mehsana district. The number of non-agricultural credit societies has decreased during the last three years. The percentage of membership to total urban population is only 2.8 per cent.

Out of these 21 societies, fifteen are salary earners' societies. Most of them are stagnant. Only one teachers' society at Mehsana is in a good working order and claims class "B" in the audit classification. The other five are in "C" class and the remaining ten in "D" class.

There are six other urban credit societies, of which Kalyan Co-operative Bank, at Kalol, is formed by Harijans of the district. Its progress at present is not significant. But it would go a long way if it is properly encouraged and developed.

There are 27 towns in Mehsana district and 22 per cent of the population is urban. There are good industrial centres like Kalol, Sidhpur and Mehsana and well-developed commercial centres like Unjha, Patan, Harij etc. Thus there is a vast scope for organising more urban credit societies and banks. Looking to the occupational distribution it is found that nearly 39 per cent of the population is engaged in non-agricultural pursuits. Thus the provision of credit to small merchants, independent workers and artisans needs also to be realised. At present, the non-agricultural credit movement is just in a stagnant condition. Efforts should be channalised to revive the same and expand it as much as possible.

Non-Agricultural Non-Credit Societies

The progress of non-agricultural non-credit societies in Mehsana district is a significant one. With 118 societies having 16,475 members, it comes second to agricultural credit societies in its spread and coverage. It is interesting to examine the details of some of the important types of societies which fall under this group.

Industrial Societies

There are 79 industrial societies with 5,071 members in the district. Most of these societies consist of weavers', tanners' and leather workers' societies. Many of these societies were registered during the Baroda State regime. Some of the weavers' societies and chamars' societies have provision in their by-laws for extending credit to their members. Thus some of them work as credit societies also.

Among these industrial societies, nearly 54 societies are those of weavers. Most of these societies are occupied with yarn distribution work only. The societies are not well-developed and are not in good working condition. The lack of trained personnel and want of adequate

finance are the main handicaps in the working of these societies. The following audit classification shows the situation clearly.

AUDIT CLASSIFICATION (WEAVERS' SOCIETIES)

A	0
B	10
C	30
D	14
Total ..	54

Not a single weavers' society is of "A" grade. While only 10 societies come in B group, all the remaining fall in C and D groups. The backward and undeveloped nature of the societies is clearly apparent.

Among other industrial societies, a major part is formed by tanners' societies. There were a number of co-operative tanners' societies at the time of merger, registered with unlimited liabilities and with no share capital. They provided only credit facilities to their members. But some of these had stopped working. After the merger some of these societies have been renewed and are engaged in supplying raw materials to their members. There are some other societies for artisans of different rural industries also. The audit classification of industrial societies other than weavers' societies is as follows.

A	0
B	4
C	10
D	10
Non-Class	1
Total ..	25

The classification shows that the financial and management conditions of the majority of the societies are not good. These societies are also stagnant and are in existence only in name.

Consumers' Societies

The distributive aspect of co-operative societies is a recent war-time growth. Food rationing and preferential treatment by Government to these societies during the war gave a good fillip to the movement in general. But in Mehsana district, consumers' co-operation is also not well-developed. The reason for this slow growth seems to be due to the backwardness of the people and small impact of food rationing because of the high predominance of rural areas. At present, there are only 20 consumers' co-operative societies in the district. As the audit classification reveals, more than 50 per cent of them are in good working condition.

Housing Societies

The co-operative housing movement is next in importance to the consumers' society in Mehsana district. At present there are 27 co-operative housing societies with 984 members. All these societies are of the tenant-ownership type, of which 11 are housing societies for backward classes. Nearly 96 buildings are under construction by the rural and urban housing societies. According to the audit classification no society is in "A" class. While 1 is in "B", 6 are in "C" and 17 are in "D" class.

As to the numerical growth, these type of societies come next to that of agricultural credit societies. But many of these societies are in existence only on paper. The whole movement of co-operation in Mehsana appears to be lacking in activity and progress. It has reached a stage when it requires some impetus both from within and outside the movement in order to rejuvenate its spirit of co-operation.

SUPERVISION

One of the vital reasons for the slow growth and backward nature of the co-operative movement in the district is the lack of proper supervision and inspection. The absence of well-qualified and efficient personnel for efficient management has also been a great handicap. It was only recently that supervising unions were formed in the district. At present there are seven supervising unions with only 159 societies as members working in the district. The district co-operative board which has been recently formed has started taking keen interest in the spread of co-operative propaganda and education.

It is learnt that more co-operative supervising unions have been formed recently in the district. The Central Bank is also trying to expand its resources by way of increasing its share capital. During the year 1952-53 commendable efforts have been made to recover old dues and good success has been attained in this direction. It lies now

with the Central Bank to frame its financial policy on proper lines and it must play a vital role in the further development of the movement.

CONCLUSION

We have examined the various facets of the co-operative movement in the district. It is observed that the co-operative movement has geographically a wide spread but covers only 8 per cent of the population. The development has also been one-sided in favour of rural credit only. The management has proved very costly and inefficient and has resulted in many societies becoming stagnant. The primary societies being backward, the District Central Bank also has limited scope for work. Working capital and advances of the District Central Bank are very low compared to those of other districts. The lack of proper supervision and absence of good personnel in the movement has been responsible to a great extent for the stunted development.

The problem of co-operation is of vital importance in the development of the region, and hence demands special attention. It is desirable that its development and working are studied more closely and critically and its weak points found out as early as possible.

CHAPTER XI

INDUSTRIES

RURAL AND COTTAGE INDUSTRIES

Mehsana district presents a picture of old industrial organisation with its well-developed arts and crafts which are affected by various forces in modern times and are gradually passing away.

The principal cottage industries in the district are Handloom Weaving and Tanning. Besides these, the following cottage industries are also carried on at different centres on a minor scale in the district *viz.* Patola (Sari) Weaving, Calico Printing and Dyeing, Block-engraving, Brass and Copper Metal works, Wood Carving, Clay and Pottery works, and China Clay Washing.

HANDLOOM INDUSTRY

The handloom industry is one of the principal cottage industries in the Mehsana district. This industry is being carried on by hereditary weavers who are spread all over the district. Generally they belong to the depressed class community of Harijans. They are ignorant and ill-equipped and carry on their industry in their homes by primitive methods. The estimated number of weavers is about 20,000.

The following table indicates the number of looms in the Mehsana district.

Name of the Taluka or Mahal	No. of looms
1. Mehsana	683
2. Visnagar	540
3. Kheralu..	888
4. Sidhpur	856
5. Patan	1417
6. Chanasma	747
7. Kadi	344
8. Kalol	312
9. Vijapur	689
10. Radhanpur	220
11. Harij	13
12. Sami	220
13. Santalpur	29
	6958

This industry is spread over many talukas. Mehsana, Sidhpur, Kadi, Kalol, Vijapur, Patan and Chanasma are the talukas where the handloom industry is well established. On the western side of the district, *i.e.* in Harij, Sami and Santalpur talukas, it is not well-developed.

The cloth manufactured on the looms is rough, and generally used by the rural population. The main products of industry are Khadi, Towels, Bed-sheets, and Dhoties. On an average one weaver can produce five yards of cloth per day on a throw shuttle loom. He can thus manufacture 36 yards of cloth out of ten pounds of yarn per week.

With a view to providing technical training to artisans in the use of improved methods of production and of improved tools and appliances, a peripatetic weaving school was maintained by the former Baroda Government and it has been continued even after the merger. It is being shifted from one place to another in the district according to the needs of artisans. At present it is located at Patan. The following centres have been so far covered by this school in the Mehsana district : Unjha (Taluka Sidhpur), Visnagar and Patan.

WORK THROUGH CO-OPERATIVES

There were at the time of merger 47 Weavers' Societies out of which 37 societies were providing merely credit facilities to the weavers and were registered with unlimited liability with no share capital. The by-laws of these societies did provide for production activities, but none of the societies had taken up such activities. The remaining ten societies were Taluka Madhyastha Mandals, which were started mainly to facilitate the distribution of yarn to the weavers. These Mandals were of the federal type in as much as their by-laws permitted both the individuals as well as the societies to become members. Some of these weavers' societies happen to be absolutely stagnant since a long time and they only deserved to be taken into liquidation. In some cases efforts were made to convert the bye-laws on the type of full fledged producers' societies on the model of those existing in the State of Bombay. This task is being expedited but the same is faced with certain technical difficulties in respect of loans overdue to be recovered from the members and also due to inability of the members to contribute adequately towards the share capital.

After the merger as many as 28 new weavers' societies were newly organised on the model by-laws prescribed by the Department. Most of the newly registered societies as well as some of the old Taluka Weavers' Societies have been busy with yarn distribution work. Lack of trained personnel and want of adequate finance are the main handicaps in the working of the weavers' societies.

FINANCE

During the Baroda State regime, loans were granted to individual weavers to the extent of Rs. 200 to 300 each. These loans were free of interest and were recovered by small monthly instalments through the revenue authorities. There being no close supervision or control, most of these weaver-borrowers failed to pay their dues within stipulated time. The work of recovering their overdues is being attended to by the Industrial Co-operative and Village Industries Section of the Co-operative Department after the merger. The present policy is to encourage cottage industries on a co-operative basis, wherever possible and adequate loans are being granted by Government. However, the weavers' societies require a large amount of funds and as their share capital is very small the usual financing channels are reluctant to meet their demand as they regard loans to such societies very risky.

GENERAL

The handloom industry has been passing through a critical period of depression and slump. During the last few years the progress of the industry has been hindered due to acute shortage of yarn. The slump in the market, which occurred in the early part of the year 1952, had very adverse effects on the weavers and their societies. There is no demand for the handloom products and consumers' preference has shifted from high priced handloom cloth to cheaper mill made cloth. Thus the extent of unemployment amongst the weavers has become very large. The picture of the handloom industry in its existing form appears to be very gloomy. It is rather a sorry tale of shortage, slump, depression and unemployment.

In order to put handloom industry on proper footing it is essential that yarn distribution should be done only through weavers' societies. Yarn should be made available to such societies regularly and in adequate quantity as per their requirements at the most economic rates with very little margin on the wholesale price. In short, procurement of raw materials, distribution, provision of adequate finance, transport facilities, an organisation for market study in India and abroad, establishment of an institution to prepare designs appealing to the consumers' taste, reservation of certain varieties of production and exemption of handloom products from sales-tax, octroi or other duties or levies, are the problems of vital importance, which should be taken into consideration for the development and extension of the handloom industry.

TANNING INDUSTRY

Tanning industry is next in importance to the handloom industry in the Mehsana district, which is being carried on by the local tanners

(Chamars) who belong to backward class community, *viz.* Harijans. They are generally very poor, illiterate, conservative and ill-organised. They do not possess improved types of tools and equipment and carry on their industry by employing crude methods.

Like the handloom industry, the tanning industry is also spread over the whole district. The population of "Chamars" who carry on this industry is distributed well in all the talukas and thus the industry flourishes on small or big scale in many parts of the district. The tanned leather is comparatively very poor in quality and far below the normal standard. However, in Mehsana district cropping is done mostly by well irrigation and hence the locally tanned leather though poor in quality, has been always in great demand in the district for "motes". This leather is generally used in preparing footwear, leather-buckets, "motes", and for such other agricultural purposes. Thus the market is mainly local.

The tanning industry alone does not provide sufficient work to all the tanners as a full-time occupation and hence most of them have to engage themselves in other occupations *viz.*, agricultural labour, as subsidiary to tanning. There are about 4000 tanners who are spread throughout the district and follow tanning as a part-time occupation. With a view to providing technical training to the artisans in improved methods of production and in the use of improved types of tools and appliances, regular peripatetic tanning schools had been established at different centres during the Baroda State regime which have been continued even after the merger. The following centres have been already covered by the school : Patan, Ranuj, Manund, (Tal. Patan), Dhinoj (Tal. Chanasma), Lakhawad Kherwa (Tal. Mehsana), Kheralu, Varetha, Sundhia. Umta, Denup, Balad (Tal. Kheralu), Mokasan, Deosana (Tal. Kadi). At present the Tanning School is located at Vadnagar in Kheralu Taluka.

There were 15 Tanners' Co-operative Societies at the time of merger, registered with unlimited liability and with no share capital which provided only credit facilities to their members. Some of them had been stagnant since long. Efforts are being made to organise these societies into full-fledged producers' societies, wherever possible. After the merger, 8 new Tanners Societies have been organised which are mainly engaged in supplying raw materials to their members. Efforts have been continued to organise a greater number of Tanners' Societies on sound lines.

During the Baroda State regime, loans to the extent of Rs. 150/- to Rs. 250/- were being granted to individual tanners in order to encourage their industry. However, this policy has proved to be unsound and risky. There was no close supervision or control over these indivi-

dual tanners. These loans were being recovered in small monthly instalments through the revenue authorities. However, the tanners being very poor and illiterate, were never punctual in repayment of their instalments and a large amount of loans thus advanced and which have been overdue since long, is being recovered with great difficulty.

The present policy is to encourage cottage industries on co-operative basis, wherever possible and hence no individual loans are encouraged except in the cases where there are no possibilities of organising a co-operative society for a particular class of craftsmen within a reasonable time. This policy is being operated in this district for the development and extension of tanning industry in the Mehsana district.

There are various handicaps in the formation of the Tanners' Co-operative Societies. The Central Financing Agency in the Mehsana district has been all the while very reluctant to advance loans required for working capital by the Tanners' Societies, even against Government guarantee to the extent of 30 per cent. Secondly, the tanners are generally very ignorant, illiterate and superstitious. They do not like to work under the common shed on joint production basis, and hence production is low and not of good standard. Thirdly, there is a dearth of trained workers among this class of people to guide them and to manage the affairs of their societies properly.

However, efforts have been made by the Industrial Co-operative and Village Industries Section of the Co-operative Department in the Mehsana district to improve the economic conditions of tanners by bringing them into the co-operative fold.

Leather Working

There are a number of artisans engaged in this industry in the district. Mostly, this industry is carried on by "Mochis" and also by the tanners to some extent. Every big village has one or two footwear workers to cater to the needs of the villages. The chief centres are Mehsana, Patan, Visnagar and Kalol. This industry is encouraged through Industrial Co-operative Societies wherever possible. One leather working school has been stationed at Gothwa, taluka Visnagar, to train the artisans in the improved methods of leather working. The school has covered so far the following centres in the district *viz.*, Vadnagar, Pansar, Kharod, Dangarwa, Rupal and Charda.

PATOLU (SARI) WEAVING INDUSTRY

Patan is an ancient and well known place in Mehsana district, where 'Patolu' (Sari) weaving industry is carried on by the artisans who are popularly and commonly known as Salvis. It is reported

that this industry was once in a very flourishing condition. However, these days, it is decaying for want of market for its products. There is at present only one Salvi family of Shri Laherchand Kasturchand at Patan which follows this handicraft with the help of 6 to 7 members.

As to the raw materials, silk yarn (both pure and artificial), cotton yarn, chemicals and colours are used in this industry, and are either brought from Bangalore or Bombay or from such other markets. A special type of throw shuttle loom with necessary accessories is the only equipment used for weaving and some simple types of vessels are used for dyeing purposes. The pattern is dyed and printed on the yarn first. Then the weaver brings the warp and waft together and evolves the pattern. This is the speciality. Beautiful saris and table-cloths are being woven so accurately and artistically, wherein colours are so ingeniously blended that every piece is a work of high artistic beauty and of craftmanship. Patola (Sari) was once used as a wedding sari among Hindus all over Gujerat. Patolas are woven in different patterns *viz.* (1) Barikunjav, (2) Ratan Chawk, (3) Leaf Pattern (Pan Bhat) (4) Elephant and (5) Square pattern etc. Sarees of various designs of the size 6 to 9 yards in length and 45″ to 54″ in width are being woven by the artisans.

Once this industry was in a highly flourishing state. The products had market in France, America, Africa, Java etc., prior to war, but owing to the availability of cheap fancy goods both in India as well as in the foreign market, there is practically no demand for the products now-a-days, since they are comparatively very costly.

PRICE RANGE PER PIECE

Products	Prewar rates (in Rs.)	Current rates (in Rs.)
1. Patola Sari ..	75 to 90	400 to 700
2. Blouse piece ..	20	90
3. Table cloth with colour design ..	30	120

General

The industry which is gradually decaying deserves to be encouraged by the State by affording marketing facilities at Government cost both in India as well as in foreign countries through Government Agencies such as Sales Depots, Emporiums, Shows and Exhibitions in foreign countries. Necessary particulars in this connection have been already

supplied to the authorities concerned by the I. C. and V. I. Section of Co-operative Department in Mehsana district with a request to do the needful in the matter, in order to revive one of the best and the most famous Indian Art and Craft.

CALICO PRINTING AND DYEING INDUSTRY

This industry is being followed mainly by Bhavsars, Khatri and Chhipas at various centres in the Mehsana district, namely Vadnagar (Taluka Kheralu), Patan and Ranuj (Taluka Vijapur), Pethapur (Taluka Kalol), Dhinoj and Chanasma (Taluka Chanasma). There are about 300 artisans engaged at present in this industry who follow old methods in the absence of necessary facilities for training in the use of improved methods and thus both the quantity and the quality of their products are far below normal and poor. Vadnagar is the biggest and an age old centre, where about 200 artisans follow this industry.

Colours, chemicals, cotton yarn and cloth are the main raw materials used in this industry which are obtained from Ahmedabad, Bombay and such other markets and merchants dealing in this trade. Chemicals used for dyeing purposes are Castor Oil, Soda Ash, Beri Powder, Alum, Copper Sulphate, Caustic Soda, Gum, Lime and Napthol. Printing tables and their accessories, wooden blocks of various designs for printing, copper and other metallic as well as earthen and wooden tubs and vessels are the main equipment and tools used in this industry.

Production and Market

Generally gray cloth is used for dyeing. The products are consumed locally as well as outside the district *viz.*, Deesa and Ahmedabad by the rural population. Country saris and pettycoats are made from the dyed cloth. Price per sari of 5 yards in length and 50" in width comes to about Rs. 6/-.

Generally artisans carry on the trade with the help of their family members and they also employ other labourers *viz.*, Thakardas, wherever necessary. The financial conditions of most of the artisans engaged in this industry has been found to be very sound. Some of them are found to invest an amount to the extent of Rs. 3 to 5 thousand in their concern.

Work through Co-operatives

There is an association of the artisans at Vadnagar *viz.* Shri Vadnagar Rangati Kapad Association, Vadnagar, Taluka Kheralu, through which the members obtain their raw materials *viz.*, cloth, which was

a controlled commodity. The artisans are being contacted and explained the benefits of co-operative societies from time to time and necessary propaganda is being carried on by the Departmental Officers, as a result of which most of the artisans at Vadnagar have been persuaded to form a co-operative society after undergoing necessary training in the improved methods. The authorities concerned have been also moved to post one Dyeing and Printing School at Vadnagar for this purpose as early as possible. Also it has been proposed to locate such a school at Aglod (Taluka Vijapur) which is selected for intensive development under the community projects in the Mehsana district.

Wooden Block-Engraving Industry

Wooden blocks of various designs required for Calico Printing are being engraved out of teakwood at Pethapur, Taluka Kalol. There are about 10 small concerns employing about 60 artisans in this industry. There is also an Association of the Karkhandars at their place.

Seasoned teakwood which is locally available from timber merchants is mainly used for preparing the blocks. A set of engraving tools worth about Rs. 200 as also the tools which are ordinarily used in carpentry work are required by the artisans engaged in this industry. One artisan takes about one day or so for preparing a block of 6″ x 3″ size. The selling price of the blocks depends much upon the nature of the design and the craftmanship. The products are in demand at Baroda, Ahmedabad, Bombay, Surat and also at local centres. The industry has suffered a good deal because of the introduction of screen printing.

The industry is carried on by skilled artisans independently as well as by Karkhandars who employ the skilled artisans in their concerns. The wages are paid ordinarily at the rate of Rs. 2 to 5 per day according to the nature of work and capacity of the artisan.

Efforts have been made to organise the industry on co-operative basis by the Industrial Co-operative and Village Industries Section of the Co-operative Department in Mehsana district, but because of the Karkhandars who are generally well-to-do persons, the artisans have not been yet brought into the co-operative fold. Necessary efforts are being continued in this direction.

Brass and Copper Metal Industry

Visnagar is famous all over Gujerat for its age-old Brass and Copper Metal industry which is carried on by the artisans commonly known as Kansaras. It is reported that there were about 500 Kansara families at Visnagar some 50 years ago. At present there are about 200 artisans

who follow this profession either partially or wholly. There are also some other business men who employ the artisans at their shops and carry on their trade in brass and copper pots and utensils.

The market for these products is all over Gujerat. However, owing to the availability of cheaper machine pressed goods in the market, the demand for these hand made brass and copper pots and vessels, is gradually decreasing. Artisans have to face cut-throat competition against the machine pressed goods which are available in plenty now-a-days. It has given a setback to the industry and State help and encouragement are necessary in order that the industry may survive.

Necessary efforts have already been made by the Industrial Co-operative and Village Industries Section of the Co-operative Department to organise this industry on a co-operative basis. However, most of the Karkhandars are rich persons who employ the artisans in their concerns and hence efforts have not so far met with success. Necessary propaganda in this connection is being carried on among these artisans in order to bring them into the co-operative fold.

Wood Carving

Prior to the last war, the products of this industry had a good market in India as well as in foreign countries as many of the persons from royal families and foreigners had a fancy for these articles. Now-a-days there is practically no demand in foreign countries and very little demand even in India. The industry is thus gradually decaying for want of a market for its products.

The articles are very costly and hence do not command a big market. If the industry gets State support and encouragement from Government and marketing facilities in India as well as in foreign countries, it is just likely that the industry may flourish. The products should be exhibited in various big cities and towns and exhibition shows through Government agencies such as Sales Depots, Emporiums etc.

Clay Toys and Earthen Pots Industry

Patan is a well known place in Mehsana district where clay toys and earthen pots and jars of various shapes and sizes are being prepared out of clay by the artisans who are better known as Otias (Kumbhars). The market for the products is actually local, especially during country fairs and the articles are sold very cheaply at As. 2 to Re. 1 according to their shape and size, both on account of the quantity and quality being far below the normal standard and very poor. There are about 6 to 8 familes engaged in this industry at Patan and both males as well as females carry on this work. Bulk and capacity of the work is rather poor and as such the artisans hardly earn bare maintenance out of this work.

The handiwork is gradually decaying for want of market for the products. The quality and quantity of the products is very poor and far below the normal and as such not in a position to compete in the market. The artisans should at the outset be trained in unglazed pottery work and they should hereafter be financially assisted to carry on their industry. Necessary steps should also be taken to exhibit their articles at various shows and exhibitions at Government cost, in order to encourage the industry and to keep the artisans engaged for all the time so as to earn better livelihood. There are also one or two Kumbhar families in every village of the district who make earthen pots out of ordinary clay and also bricks and tiles generally for the need of the rural population.

China Clay Washing and Refining

China clay washing and refining work is done at Kot Ransipur in Vijapur Taluka. China clay is available in large quantity near about Kot and Ransipur villages situated on the bed of river Sabarmati which passes through the eastern border of Vijapur Taluka. The work of digging, washing and refining China clay is done at present by one private company *viz.*, the Oriental Prospecting Co., which has obtained due permission from Government to carry on this work on a licence for which the company has to pay a royalty at the rate of Rs. 3 per ton of China clay. The Company has its own workshop at Kot Ransipur with necessary tools, machinery and equipment worth about Rs. 2 lakhs.

China clay is being refined by way of various scientific processes at the workshop. The refined China clay is then sent *via* Vijapur station to the different centres in India *viz.*, Shan, Morvi, Sihor, Jamnagar Potteries in Saurashtra and also Ahmedabad. This refined China clay is used in glazed pottery work out of which different types of glazed articles such as cups and saucers, jars etc. are being prepared at the above mentioned pottery centres. This clay is also used in Textile mills at Ahmedabad in sizing and also in distempers, white polish and indigo and for paper manufacturing purposes. The present rate of selling is about Rs. 140 to 150 per ton of refined China clay.

The main difficulty that is being experienced in connection with this industry is that of transport. The centres of this industry are about 10 to 12 miles from Vijapur railway station and there are no good roads. Carriage facilities are also not easily available. During the Baroda State regime, the Government had already a plan to afford railway facilities upto the main centres of this industry *viz.*, Kot Ransipur, and the schemes were already under operation. However, after the merger of Baroda State, this work has been postponed.

If State help and encouragement from Government in regard to transport facilities are afforded, it will be of much help to the industry.

BIDI MAKING INDUSTRY

Bidi making industry is carried on at Patan, Radhanpur, Kheralu, Kadi, Mehsana, Visnagar, Chanasma, Vijapur, Unjha (Tal. Sidhpur), Kharana (Tal. Vijapur) and at various small centres in the Mehsana district. There may be about 2,000 to 3,000 workers engaged in this industry. There are big bidi making factories run by Karkhandars at Patan, employing about 1,500 workers.

BAMBOO, SARKI (CANE) AND PALM-LEAF WORKS

Utility articles such as Baskets, Supdas and Brooms are manufactured on a cottage scale from Bamboo, Sarki (Cane) and palm-leaves at various centres in the district by the artisans who generally belong to sweeper class *viz.*, Bhangis, etc. There are about 300 artisans engaged in the industry in the district. Both male and female artisans carry on this industry with the help of their other family members and get a good margin on account of their labour.

The artisans engaged in this industry are very poor, illiterate and ill-organised. Necessary efforts have been already launched by the Industrial Co-operative and Village Industries Section of the Co-operative Department in Mehsana district to organise this class on a Co-operative basis, as a result of which two industrial co-operative societies, *viz.*, The Harijan Gramodyog Sahakari Mandal Ltd., Mansa, Taluka Vijapur and Dawada Audyogic Sahakari Mandal Ltd., Dawada, Taluka Visnagar, have been organised and are in operation. Both the societies are financially assisted by Government through Joint Registrar, for I.C. and V.I., Poona, by way of loans and subsidies. Necessary efforts are being continued to bring this class of artisans more and more into the co-operative fold.

MISCELLANEOUS COTTAGE INDUSTRIES

There are also other Cottage Industries like Snuff-Making, Ivory Bangles Making, Wool Spinning and Weaving and Embroidery Work, Tailoring, Wood Turning, Trunk, Bags, Almirahs and Safes Making, Silk Weaving etc. which are carried on at different centres in the district on a very small basis. There are about 10 small snuff making concerns at Kadi manufacturing snuff on a small scale and selling locally as well as outside the district. Tobacco is available locally as well as obtained from Kaira District. Ivory Bangles Making industry is carried on at Patan, Kadi and Visnagar by the artisans who are better known as Khatris. The main raw material required for this industry is ivory, which is obtained from Bombay and Ahmedabad. The Khadi Self-sufficiency Scheme, which is sponsored by the Village Industrial Committee, Bombay, is also being operated at different

villages in the district and it has proved to be a suitable subsidiary cottage industry for men as well as women. Propaganda is being carried on in the villages of the district through various Government as well as non-official agencies for its development and extension.

Wool Spinning and Weaving

Wool is available in Radhanpur, Sami, Santalpur and Harij Talukas in a very small quantity from the Rabaris who rear and maintain sheep. The Rabaris spin the wool and sell it to the weavers who weave them into rather rough types of "Kamlas."

Bed-Tape (Patti) Weaving

The main centre of this industry in the Mehsana district is Valam, Taluka Visnagar, where there are about 50 families of Ravalias who follow this industry. They have already organised their co-operative societies, *viz.*, Valam Patti Weavers' Co-operative Society Ltd., Valam, which is managed and supervised by the Sanchalak, Sarvodaya Ashram, Valam, taluka Visnagar. Owing to the recent slump in the prices of yarn, the industry has suffered a set-back. State help and encouragement from Government is necessary so far as marketing and supply of raw materials are concerned.

Mashru Cloth Weaving

Beautiful Mashru Cloth is being woven from pure as well as artificial silk by the artisans known as Khatris and Tais at Patan. There are about 500 artisans who follow this industry. They have organised an association for their business purposes. There is also one Co-operative Society of Khatris at Patan.

The market is mainly local. But products are also in demand at different places in Gujerat, Saurashtra, Kutch, Indore and Marwar. Prior to the partition of India it had a big market in Sind and Multan. The industry is gradually decaying for want of a market and owing to availability of cheap and fancy mill-made goods. Necessary efforts are being made and help is being rendered to the Mashru weavers at Patan by the Industrial Co-operatives and Village Industries Section of the Co-operative Department in order to organise their industry on proper footing.

Steel Trunk and Safes and Iron Work

Patan, Chanasma and Visnagar are the chief centres in Mehsana district where safes and almirahs are being made from steel by blacksmiths on a very small scale. Steel trunks are also made at Mehsana, Chanasma and Visnagar. The market for the products is mainly

local. Besides, there are one or two families of Luhars in most of the villages in the district who manufacture agricultural implements and meet with the needs of rural population.

Wood Turning and Carpentry Work

Ordinary type of wood turning work is done at Kalol. Carpentry and furniture work is done at Mehsana, Vijapur, Sardhav (Taluka Kalol), Visnagar, Sidhpur and Patan. The market is mainly local.

CONCLUSION

The brief survey of village industries made above reveals some of the important facts. It shows that if rural cottage industries are to be developed, it is necessary to deal with those deficiencies which have led to their decline. This is the lack of (1) proper organisation (2) reasonably efficient methods of production (3) raw materials (4) finance and (5) good marketing facilities. Any programme for rural cottage industries has to aim at the removal of these deficiencies first. The Government department of Industrial Co-operatives and Village Industries has been trying to help in the matter and further the development of rural industries. But it still remains a question whether the activities on behalf of the department alone with its financial and a number of other limitations would suffice for such a huge task.

CHAPTER XII

EDUCATION

Education is of basic importance in a planned development of any region. Particularly in the backward areas it has a very important part to play. In a progressive democratic set-up the role of education becomes crucial, since progressive democracy can function well, only if there is an intelligent participation of the masses in developmental activities and an active co-operation with due understanding of all affairs leading to the furtherance of the community's well-being.

A critical assessment of the situation regarding literacy level and educational standard of the district is therefore an absolute necessity.

TABLE I

LITERACY LEVEL IN GUJERAT DISTRICTS: 1951

District	Percentage of literates to Total	Percentage of literate Males	Percentage of literate Females
Mehsana	25.03	34.94	15.05
Banaskantha	7.16	11.94	2.05
Sabarkantha	14.37	23.58	4.91
Ahmedabad	32.59	43.55	19.67
Kaira	29.13	40.33	16.85
Panch Mahals ..	13.40	20.38	5.95
Baroda	28.60	39.01	17.23
Broach	27.90	39.80	15.29
Surat	29.08	39.01	19.04
Amreli	29.70	39.37	19.74
Dang	6.37	10.38	1.79
Bombay State ..	*24.55*	*35.46*	*12.85*

Source : Census Tabulation Office, Bombay.

Literacy level is one of the important standards in judging the extent and efficiency of educational activities of any region. As the table indicates, in Mehsana district literacy extends to 25.03 per cent of the population. Compared to the other districts of Gujerat and to the Bombay State as a whole, the literacy standard is fairly high. Even male and female literacy also stands a fair comparison. The following table shows the literacy level in various divisions of the district.

TABLE II

LITERACY ACCORDING TO TRACTS IN MEHSANA DISTRICT: 1951

Division	Percentage literacy Total	Percentage literacy Male	Percentage literacy Female
Rural Mehsana	26.1	36.6	15.7
Rural Radhanpur, Sami, Santalpur, Harij ..	5.8	9.5	2.1
Rural Kalol-Kadi	23.4	33.2	13.5
Rural Visnagar-Vijapur	28.1	39.0	17.4
Rural Patan-Chanasma	19.4	27.7	10.8
Rural Kheralu-Sidhpur	19.4	27.1	11.6
Total Rural Tracts	*21.0*	*29.5*	*12.3*
Non-City Urban Areas of:			
Mehsana, Radhanpur, Harij	34.4	48.6	19.8
Vijapur, Visnagar, Kalol-Kadi	36.5	49.8	23.1
Sidhpur, Chanasma, Kheralu, Patan ..	39.9	51.1	28.9
Total Urban Tracts	*37.8*	*50.2*	*25.4*

Source : Census Tabulation Office, Bombay

The above table clearly shows that the spread of literacy is not even in all the regions of the district. Urban areas have a higher literacy level compared to rural areas. Moreover in the rural tracts, Radhanpur, Sami, Santalpur and Harij are very backward areas with only 5.8 per cent of literacy. Patan, Chanasma, Kheralu and Sidhpur come nearer to the total rural average of 21. Mehsana, Kalol, Kadi, Visnagar and Vijapur tracts have on the whole a good average. In the urban areas, most of the places are on equal level. With 34.4 per cent of urban literacy Mehsana, Radhanpur and Harij are on lower level while Sidhpur, Chanasma, Kheralu and Patan are on a higher level with 39.9 per cent of urban literacy. In female literacy the standard is low in every tract whether rural or urban.

To get a still clearer picture of literacy standard it will be worthwhile to see it in relation to occupation followed by the head of the family. That will indicate how far occupation influences the literacy level of the individuals concerned.

TABLE III

LITERACY LEVEL ACCORDING TO LIVELIHOOD CLASSES: 1951

Livelihood Class	Percentage of literates to Total	Percentage of literate Males	Percentage of literate Females
Agricultural Classes			
1 Owner Cultivators ..	22.9	33.3	12.5
2 Tenant Cultivators	9.5	13.8	5.0
3 Cultivating Labourers	11.3	16.2	6.2
4 Non-cultivating Rent Receivers.. ..	30.5	44.5	20.5
Non-Agricultural Classes			
5 Production other than cultivation ..	25.9	36.9	16.6
6 Commerce	45.0	58.6	31.3
7 Transport	21.1	29.3	11.8
8 Other Miscellaneous	27.6	38.0	17.5

Source : Census Tabulation Office, Bombay.

The above table clearly shows that literacy level has some relationship with different types of occupation. The cultivators owning land and the non-cultivating rent receivers have a comparatively high percentage of literacy in relation to tenant cultivators and cultivating labourers. Literacy among the tenant cultivators is the lowest. In female literacy also these two classes are far behind compared to all others.

In non-agricultural livelihood classes those occupied in Commerce stand highest with 45 per cent of literacy. Other three groups are more or less on equal footing. In female literacy also the Commerce group surpasses all other groups.

It can be concluded from the table that literacy and economic conditions seem to be in some way interrelated. Commerce, being a well-paid occupation has got a higher literacy, while the tenant cul-

tivators and cultivating labourers being the poorer in the lot have got the lowest literacy level. Betterment of economic conditions and enhancing of the education facility to the utmost extent possible, seem to be the two most desirable things for increasing literacy.

In continuation of the above discussion on literacy, it is desirable to examine the literacy standard in relation to age group of the population.

TABLE IV

LITERACY IN RELATION TO AGE: 1951

Age Group	Percentage to total		Rural		Urban	
	Literates	Illiterates	Literates	Illiterates	Literates	Illiterates
0-4	—	—	—	—	—	—
5-9	8.7	91.3	7.5	92.5	14.1	85.9
10-14	41.3	58.7	36.9	63.1	57.8	42.2
15-24	39.8	60.2	34.6	65.4	56.8	43.2
25-34	32.0	68.0	27.2	72.8	49.4	50.6
35-44	26.7	73.3	22.3	77.7	41.5	58.5
45-54	23.2	76.8	18.8	81.2	37.5	62.5
55 and above	13.8	86.2	10.4	89.6	25.3	74.7

Source : Census Tabulation Office, Bombay

The above table shows two things. One is the progress made in recent years by showing the increment in the percentage of literate persons in younger age groups. The highest percentage of literates *viz.*, 41.3 per cent in the age group of 10 to 14 shows the success, though not much, of compulsory education in the recent past. The table also brings out the acute necessity of adult education. More than 60 per cent of the population above the age of 25 is illiterate, the case being still worse in rural areas. "This existence of a large number of illiterate parents who attach no value to literacy of others, undoubtedly proves one of the greatest obstacles to the introduction of a Compulsory System of primary education."* Thus the need of adult education of the district is also very great.

* Adult Education Committee, Sargent Report, p. 46.

THE EDUCATIONAL STANDARD

Besides the literacy standard, what is important is to know the educational standard of the region. Progress in any direction depends more on educational standard rather than the literacy level. The following table shows the education standard of the district.

TABLE V

EDUCATIONAL ATTAINMENTS IN MEHSANA DISTRICT: 1951

Standard	Percentage to total literates	Percentage to total male literates	Percentage to total female literates
Primary School ..	95.4	94.0	98.6
Middle School	3.1	3.9	1.0
Matriculates	0.8	1.2	—
Inter	0.1	0.1	—
Graduate	0.1	0.1	—
Post Graduate	—	—	—
Teaching	0.4	0.5	0.2
Agriculture, Engineering, Veterinary, Commerce ..	—	—	—
Legal	0.1	0.1	—
Medical	0.05	0.05	—
Others	—	—	—

Source ; Census Tabulation Office, Bombay.

The above figures very clearly bring out the educational backwardness of the region. Only 0.8% of the literate population has reached the Matriculation level. Most of the literacy is confined to primary school level only, and there is no corresponding progress towards the higher standard of education at all. The number of persons who have studied Agriculture, Engineering etc., is very insignificant.

EXTENT OF EDUCATIONAL FACILITIES

In a survey of this type it is difficult to find out in detail the various reasons of the educational backwardness of the region. It requires a more comprehensive social and economic investigation with that particular object in view. In our present work, we shall confine ourselves only to the analysis of existing educational facilities and evaluate their adequacy. The following table shows the total number of towns and villages with and without schools in various districts of Ahmedabad division.

TABLE VI

NUMBER AND PERCENTAGE OF TOWNS WITH AND WITHOUT SCHOOLS IN AHMEDABAD DIVISION (MARCH 1953)

District	Total No. of Towns and Villages	No. of Towns and Villages with Schools	Percentage to total	No. of Towns and Villages without Schools	Percentage to total
Ahmedabad ..	770	465	60.7	305	39.3
Kaira	995	670	67.3	325	32.7
Banaskantha ..	1,341	165	12.3	1,176	87.7
Sabarkantha ..	1,778	531	29.8	1,247	70.2
Amreli	361	176	48.7	185	51.3
Mehsana ..	1,351	609	45.0	742	55.0
Total ..	6,596	2,616	39.6	3,980	60.4

Source : Director of Education, Poona.

The above table clearly shows that while Kaira and Ahmedabad districts have got 67.3 and 60.7 percentage of villages with schools, Mehsana has got only 45. This means that more than half of the number of villages are without any school facilities at all. But in certain cases, the educational needs of some villages are served by a neighbouring village with a school. The number of such villages is as follows.

TABLE VII

NUMBER OF VILLAGES WITH NO SCHOOL FACILITIES IN AHMEDABAD DIVISION (MARCH 1953)

District	No. of villages that are served by neighbouring school	No. of villages that have no facilities at all	Percentage of villages to total which have no facilities at all
Ahmedabad ..	151	154	20.0
Kaira	206	119	11.9
Banaskantha ..	147	1,029	76.7
Sabarkantha ..	1,023	224	12.5
Amreli	5	180	49.8
Mehsana ..	167	575	42.5
Total ..	1,699	2,281	35.5

Source : Director of Education, Government of Bombay, Poona.

There are 42.5 per cent villages where no educational facilities exist. Ahmedabad and Kaira are in a better position. But going beyond these figures, if we examine the size of villages which have no facilities, we will find that Mehsana district stands in a rather unfortunate position.

Looking to the figures given in the table No. 8 it becomes quite evident that the number of villages without a school and having a population more than 700 are the highest in Mehsana district second to Banaskantha district. The number of big size villages of No. 1 and 2 is also similarly very high in Mehsana district. It is really surprising and rather sad to note how the Government, most willing to bring in Compulsory and Free Primary Education in almost all villages with a population of 1,000 and over in 1947, has left such a large number of villages in Mehsana district unnoticed till 1953.

TABLE VIII

SIZE OF VILLAGES HAVING NO EDUCATIONAL FACILITIES (MARCH 1953)

Sr. No.	Size of Village Population	No. of villages without any educational facilities						
		Mehsana	Ahmedabad	Kaira	Banaskantha	Sabarkantha	Amreli	Total
1	1000 & over	14	3	5	24	1	—	47
2	1000 to 900	10	3	1	20	3	2	39
3	900 — 800	31	1	8	43	4	—	87
4	800 — 700	37	12	18	57	3	2	129
	Total	92	19	32	144	11	4	302
5	700 — 600	38	34	22	75	18	5	192
6	600 — 500	59	40	23	101	18	13	254
7	500 — 400	76	38	40	153	32	24	363
8	Below 400	477	174	208	703	1,168	139	2,869
	Grand Total	742	305	325	1,176	1,247	185	3,980

Source : Director of Education, Poona.

It will be worthwhile to know briefly the condition of various grades of schools in the region. The table below shows the number of institutions and pupils in each grade of school.

TABLE IX

ALL KINDS OF RECOGNISED AND UNRECOGNISED INSTITUTIONS IN MEHSANA DISTRICT: 1953

Type of Institution	No. of Institutions	No. of Pupils
Primary Schools	768	1,23,547
Secondary Schools	71	13,896
College	1	416
Unrecognised Institutions	23	1,437
Preprimary Schools	11	678
Agricultural School	1	35
School for defectives	1	55
School for Arts and Crafts	1	17
Oriental studies	1	30
Gymnasia	4	151
Commercial Schools	2	183

Source : Director of Education, Poona.

Pre-primary Schools

As the above table shows there are 11 pre-primary schools in the district. The number of pupils attending the schools is only 678, with 412 boys and 266 girls. Looking to the population of children who can take advantage of the pre-primary schooling, this number is highly inadequate.

Primary Education

The Baroda Government had introduced compulsory primary education in most of its territories at quite an early period. Mehsana district has thus a long history of compulsory primary education. The following table shows a comparative situation of the two periods.

TABLE X

PROGRESS OF COMPULSORY EDUCATION IN MEHSANA DISTRICT

Year	No. of Primary Schools	No. of Scholars of School going age	No. of Scholars attending	Percentage of attending to total
1942-43 ..	896	1,14,672	99,140	86.4
1951-52 ..	717	1,45,887	1,17,623	80.6

Source : Director of Education, Poona, and Statistical Abstracts, Baroda State.

It is not fair to compare these two figures without any reservation because the area and population of the district has changed a great deal after the merger. The district has become bigger in area and population. From that point of view the decrease in the total number of scholars attending has increased, but the percentage of the same to total of the school-going age has gone down considerably. This may perhaps be due to the merger of the rather more backward areas of Radhanpur, Sami and Santalpur and at the same time decrease in the number of institutions of the primary type.

There are various other factors also which should be considered in relation to the progress of primary education. One is the indifference in collecting compulsory fines by revenue authorities who are under the impression that Baroda State Compulsory Act has been replaced. Secondly, it has been a general tendency in villages where parents who are agriculturists to engage their children in field work as the daily

wage of Rs. 1 to 2 could go a great way in augmenting their family incomes. It is difficult for them to resist the temptation, which they consider more remunerative than the education of their children. Lastly, the area is often visited by famines and scarcities and is hard hit economically. This also works as a hindrance to increasing attendance in primary education.

How far even such an early introduction of compulsory education has been successful is a difficult problem to judge. The percentage of scholars of the school-going age attending the school is no criterion. The extent of regularity of attendance, and possibility of completion of four years' course by all who enroll are the two important facts that should be studied. The average daily attendance is round about 80% in case of boys and 60% in case of girls. The percentage of stagnation in Stds. I and II in 1951-52 was 41.3 and 30.8 respectively. This means that only 42% of the students entered in Std. I go upto Std. III. For judging the success of primary education we can also refer to the Age and Literacy table given before and evaluate its success. The table shows that in age groups 10-14 and 15-24 only 41.3 and 39.8 per cent respectively are literates. This means that attendance of the students actually on the roll and their extent of the completion of four years' course in the recent past has not been to the desirable extent. This goes to prove that a huge expenditure on compulsory education has been a waste and has not led us to any great achievement.

Secondary Education

As the table given before shows, there are 71 secondary schools with nearly 13,896 pupils. We have also seen that the total percentage of persons who have reached upto Middle School and Matriculation are 3.1 and 0.8 respectively to the total literate persons. The reasons for such low standards are many.

It must be noted that distribution of secondary schools in rural areas is not proper. Out of 71 schools, 26 are in urban areas and 45 are in rural areas. The distribution of population, which is 78 per cent rural and 22 per cent urban, shows that there should be a greater number of secondary schools in rural areas. In the opening of new schools this fact should not be overlooked.

As shown above, the number of pupils attending secondary schools is 13,896. This number seems to be rather too small. As the Sargent Committee Report points out "one child in every four or five of the age group 11-12 will be found fit for higher education. There is no reason to anticipate any substantial variation from this proportion so far as India is concerned."[1] On this basis of one child in every

1 Sargent Committee Report, p. 19.

five being found fit for education, it can be estimated, rather approximately, that out of the population of the age group 10 to 15 at least 39,000 students should attend secondary schools. Thus Mehsana is backward to the extent of 25,000 pupils not attending the secondary schools.

This indicates that all efforts should be made to increase the number to the desirable level. Government should also pay special attention to the district, and make special concessions such as help in form of grants-in-aid etc.

Higher Education

For higher education there is one college at Visnagar with both Arts and Science departments. In 1951 the College had a total strength of 416 boys. Every year the number is increasing. The number of lady students is very small. As far as college education is concerned many students go outside the district to places like Ahmedabad, Baroda etc.

Other Special Schools

There are 45 other special schools with 1,670 pupils. These schools teach various types of subjects. It is difficult to go in to details of each one. Hence we shall confine ourselves to the important ones only.

Schools for the Handicapped

There is one Government Institute for the handicapped children *viz.*, "School for Deaf and Blind" at Mehsana. There were 55 pupils of whom 3 were girls. The total direct expenditure incurred during 1951-52 on account of this institution amounted to Rs. 23,564. This school is efficiently conducted.

In 1931, deaf-mutes of the school-going age numbered 316 and of all blind at least 126 were of the condition who ought ot receive some relief. It is not possible to get such figures for recent years. When the area and population of the district have increased, the necessity of such an institution with greater facilities obviously increases.

Backward Class Education

A special residential school for "Thakardas," a backward tribe in Mehsana, was opened in 1937. The school aimed at primarily three things :—

(1) To teach agriculture
(2) To instil among boys 'the will to live better'
(3) To train leaders.

So that when the boys go back to their villages they may make good cultivators and good members of society. The school had a farm of 193 bighas and accommodation for 100 boys. Education was partly literary and partly manual. Manual education consisted of agriculture, poultry keeping and cottage industries.

As the communication received by us from the Director of Education states, there are no special primary or secondary institutions for schedule caste and backward class communities at present. They are provided with certain facilities and concession under the present system.

Social Education

The movement of social education had made some little progress in the year 1951-52 as compared to previous years. 175 classes were working during the year as against 25 for the previous years. It helped 1,471 adults to become literate. In view of the vastness of the problem of adult education that is to be faced, the effort made seems to be very meagre.

Library Movement

It is desirable that with the enforcement of compulsory education, library movement also should be encouraged, to prevent a lapse into illiteracy. Moreover, with the idea of keeping in touch with modern thinking and advancement, it is desirable that the habit of reading should be inculcated in the people and opportunities to develop the same should be afforded as much as possible.

Encouraged by such ideas, His Highness the Maharaja of Baroda State had aimed at providing every village with a library or a reading room at least. As the 1942-43 figures reveal, there were 510 libraries and 12 reading rooms in the district, and the State spent nearly Rs. 16,000 on it.

After the merger, the library movement does not seem to have received proper attention and encouragement. During the year 1951-52, there were about 450 libraries in villages aided by the Government. Arrangements are being made for women's reading classes and moving libraries for women in some villages.

On the whole, it is felt that the library movement in the district has received a setback after the merger and not much consideration is given to the movement as was done during the pre-merger Baroda State regime.

PRESS AND PUBLICATIONS

The number of presses and publications need also be examined in this section as it has a close relationship with the literacy and educational conditions of the people.

As far as publications are concerned, there is no daily paper published in the district but the need is met by the adjoining area of Ahmedabad. Most of the papers read by the people are in the Gujerati language. There are few weeklies from some taluka towns among which mention may be made of "Khedut," "North Gujerat" and "Jai Bharat."

The number of presses in the district comes to 18 only. With low literacy level and low educational standard, and majority of the people occupied in agriculture, the number of press and publications cannot be expected to be very high.

CONCLUSION

The discussion above reveals that on the whole the literacy standard is not so very low in the district as to cause alarm. The standard of educational attainment is very poor and all efforts should be made to improve the level. The facilities for secondary and higher education seem to be poor, while the expenditure on primary education seems to be high when compared to the results it yields. A slight change in the extent of expenditure from primary to secondary education may help to improve the situation. Social education, and schools for the handicapped require to be attended to a little more along with the encouragement to library movement.

CHAPTER XIII

PUBLIC HEALTH

Compared to other countries and regions the expectation of life at birth etc. in Mehsana district is as follows :—

TABLE I ※

Region	Death rate per thousand	Infant Mortality per 1000 live-births		Expectation of life at birth Male	Female	Year
U.S.A.	9.6	29	Negro	57	61	1947
			White	65	70	1947
England-Wales ..	11.6	30		66	71	1948
India	26.5	127		26.9	26.5	1921-30
				32.09	31.37	1941
North Gujerat † .. (Mehsana District)	26.3	101		24.8	24.9	1941 Census

※ *Source :* Bhore Committee Report for Mehsana—Compiled.
FROM STATISTICAL ABSTRACT of Baroda - 1942-43.

The above table indicates clearly the low level of public health in Mehsana district. The expectation of life is the lowest compared to other regions. The death roll and the infant mortality rates are also very high indicating the very low standard of public health in the territory. There is no remarkable difference between the life expectation of male and female as in foreign countries. This is perhaps an indicator of malnutrition and undernutrition, the poor sanitary surroundings and the poverty and ignorance in which both males and females are equally engulfed.

CHILD AND MATERNAL MORTALITY

Maternity and child welfare is a service that is kept in the forefront in the planning of all progressive health programmes. Children and women at the reproductive age as well as the old people are the most vulnerable groups in the community. The condition as far as child mortality is concerned for Mehsana district is as follows :—

TABLE II

CHILD MORTALITY IN MEHSANA DISTRICT : 1951

Region	Under 1 year	1 to 5 years	5 to 10 years	Total deaths all ages
Mehsana District	21.1	27.5	5.3	100
Bombay State ..	21.7	23.7	5.1	100
Indian Union ..	20.5	15.8	5.6	100
England-Wales ..	4.7	0.9	0.4	100

Source : Annual Report of the Department of Public Health and Bhore Committee Report.

The above table clearly indicates the high child mortality rate in Mehsana district. More than 50% of the persons born die before the age of 10. The rate is very high compared to Bombay State and Indian Union. Such a high percentage shows not only the lack of parental care but reveals an utter inadequacy of maternity welfare centres and medical facilities, and an absence of pre and post-natal care. It was not possible to obtain the rate of maternal mortality for the district, but taking the estimate of the central Advisory Board of Health (1938) the rate for the country as a whole was probably somewhere near 20 per 1,000 live births. With high infant mortality and high death rate, it is just possible that the maternal mortality rate may also be high. With such a high rate of child and maternal mortality the suffering from varying degrees of disability and discomfort as a result of child bearing to a number of women must be very high. This clearly indicates that in any plan of health improvement of the community for the district, great attention should be paid to the measures for adequate health protection to mothers and children.

Incidence of Diseases

For the proper understanding and analysis of the reasons for poor health in the district, it is desirable to know the incidence of various diseases in the region. The following table shows the causes of deaths in various districts of Gujerat :—

TABLE III

DEATHS BY CAUSES IN DISTRICTS OF GUJERAT : 1951

Region	Percentage of total deaths by						All other causes	Total
	Cholera	Small-pox	Plague	Fever	Dysentery	Respiratory disease		
Ahmedabad	—	—	—	66.1	.7	8.0	25.2	100
Amreli	—	.3	—	81.7	.6	3.0	14.4	100
Banaskantha ..	—	.5	—	77.7	.7	8.1	13.0	100
Baroda	—	.2	—	89.5	.4	3.7	6.2	100
Broach	—	.4	—	58.1	1.1	14.4	26.0	100
Kaira	—	—	—	37.4	.8	11.9	49.9	100
Mehsana	—	.6	—	90.8	.1	3.6	4.9	100
Panch Mahal.. ..	.1	.1	—	71.4	.7	9.1	18.6	100
Sabarkantha	—	.2	—	73.8	.1	7.7	17.6	100
Surat	—	.7	—	55.9	.4	8.5	34.5	100
Indian Union ..	3.5	1.2	0.2	57.5	4.0	7.2	26.2	100

Source : Annual Report of Public Health, Government of Bombay.

The above table clearly shows the high incidence of fever. Nearly 90.8 per cent of the deaths occur due to fever. Compared to other districts of Gujerat, the prevalence of fever is the highest in Mehsana district. No doubt that the reporting agencies are not competent enough to exactly diagnose the cause of death, and therefore there is likely to be some exaggeration in the figures. But, the predominance of the same need not be doubted.

The following table shows more clearly the incidence of fever in the important towns in the district.

TABLE IV

DEATHS BY CAUSES IN TOWNS OF MEHSANA DISTRICT : 1951

Town	Fever	Dysentery	Respiratory Diseases	Others	Total
Harij	95	—	—	5.0	100
Kadi	73.5	0.3	11.0	14.9	100
Kheralu	72.9	—	19.5	7.6	100
Unjha	71.9	—	7.4	20.7	100
Mehsana ..	70.2	1.8	13.4	14.6	100
Sidhpur	54.3	3.6	16.0	26.1	100
Dhinoj	53.6	1.2	10.2	35.0	100
Chanasma ..	48.5	1.3	14.3	35.6	100
Patan	48.4	5.1	16.3	30.2	100
Kalol	47.6	2.2	10.8	39.4	100
Radhanpur ..	40.9	8.4	15.5	35.2	100
Vijapur	33.0	6.4	17.0	43.6	100
Visnagar.. ..	31.0	1.9	14.9	52.2	100
Vadnagar ..	18.9	5.0	20.5	55.3	100

Source : Annual Report of the Department of Public Health, Bombay State.

It is clear from the above that the incidence of fever is the highest in Harij while Kadi, Kheralu, Unjha and Mehsana closely follow. As far as respiratory diseases are concerned, Vadnagar, Kheralu, Patan, Radhanpur, Sidhpur and Vijapur have a higher incidence compared to other localities. Dysentery and diarrhoea occupy higher place in Radhanpur.

Fever

The main cause of death in Mehsana district seems to be fever. In the absence of more reliable data it is difficult to find out what parti-

cular type of fever takes such a high toll. But analysing the returns of outdoor and indoor patients by diseases submitted by hospitals, we get the following picture.

TABLE V

INCIDENCE OF VARIOUS TYPES OF FEVER IN MEHSANA DISTRICT
~~1951~~ 1949

Fever	No. of ~~Deaths~~ patients treated (indoor & outdoor)	Percentage of ~~deaths due~~ patients treated for ~~to~~ fever
Malaria	26,891	54.5
Influenza	9,667	19.6
Pneumonia	2,785	5.6
Typhoid	589	1.2
Other fevers	9,447	19.1
Total	49,379	100.0

Source: Report of the Department of Public Health, Bombay State.

It is seen that the prevalence of Malaria compared to other fevers is very high. Influenza comes second, while pheumonia and typhoid form a very small portion.

Malaria Survey of Mehsana District

The Malaria Survey of Mehsana district was carried out from May 1952 to February 1953. Data from all the 53 Government dispensaries for the last five years were collected. 145 villages of representative character of each taluka were visited for the purpose of Blood and Spleen Survey. Nearly 28,732 children of the age group 8-10 were examined, out of which 615 were found to have enlarged spleen. Blood survey was taken of 317 children of the same age group, out of which only 3 showed malaria parasites. In addition to this, entomological survey in a number of villages was also carried out.

From the dispensary data, the spleen and blood survey, and the entomological survey it appeared that the transition season is from August to October. Moreover, it was found out that the chief sources of breeding are river-pools and ponds and tanks etc. The area of Khakharia Tappa is highly malarious. In Sami, Santalpur, and Radhanpur talukas which are situated at the western border, incidence

of malaria is moderate excepting one village in Radhanpur taluka, *viz.*, Kamalpur which showed a very high incidence. During monsoon Banas River and its tributaries get flooded and the villages which are situated on their banks are water logged serving good breeding ground for mosquitoes.

OTHER DISEASES

The respiratory diseases are numerically the next important group. It is feared that as a matter of fact, it may be much higher. Often deaths due to T.B. and other Consumptive Diseases are reported under fever or more convenient heading of "other causes."

Prevalence of Smallpox also is comparatively very high. As the table given previously shows, incidence of Smallpox is the highest in Mehsana district except that of Surat in the Gujerat Region. The reasons for such a high incidence are many. The backwardness of the people, the apathy and lack of facilities for vaccination and a number of other unhygienic customs lead to aggravate the incidence.

CAUSES OF LOW STANDARD OF HEALTH

The low standard of public health is very clearly reflected in the figures discussed above. The wide prevalence of diseases, the high rate of mortality and low expectation of life of the district are positive indicators of a poor state of public health in the region.

Such a state of affairs is a result of various causes, but most of them in the last analysis can be traced to the economically backward condition of the people. While the low rate of per capita income is at the back of this sorrowful state of affairs, the more immediate causes which contribute to the low level are mainly (1) unsatisfactory dwelling houses, (2) inadequate sanitary arrangements, (3) lack of proper water supply—in rural areas in particular, (4) under-nutrition and malnutrition, (5) paucity of medical facilities, and (6) general lack of education. The situation in connection with the first three causes and the sixth one are discussed in separate chapters and hence we will confine ourselves to the discussion of the problem of nutrition and medical facilities only.

PROBLEM OF NUTRITION

Individual and communal efficiency depend primarily upon the health and strength of the populace and these in turn, to a material extent upon its dietary. Food provides not only heat and energy but also body building tissues and bone building calcium. Life will cease if the supply is discontinued, disease will result if the supply is deficient or ill-balanced in its chemical composition.

In 1931, by the order of His Highness the Maharaja of Baroda, a dietetic survey of the whole State was undertaken along with general census operations. The purpose was to investigate into the sufficiency or otherwise of the nutritive value of the food consumed by the people. A questionnaire was issued to the census committees in two parts, the first of a general nature, the second relating to articles comprising the dietary, their quantity and quality to each group or caste in the talukas. As the dietary habits of people do not change very much during a short period of twenty years, we accept the analysis with all its limitations, for the important castes in Mehsana district.

TABLE VI

DAILY EFFECTIVE CONSUMPTION IN DIETS OF SELECTED CASTES IN BARODA STATE: 1931

Caste	Calories	Proteins	Calcium	Phosphorus	Iron
Vegetarian					
Lewa Patidar ..	+ 192.04	+ 6.38	+ .225	+ .312	— .0017
Audich Brahman	+ 86.00	+ 4.42	+ .003	+ .570	+ .0007
Shravak Vania ..	— 430.90	— 14.97	— .045	— .331	— .0033
Soni	— 130.10	— 11.01	— .066	— .180	— .0035
Brahmbhat ..	— 347.50	— 3.10	+ .029	+ .590	— .0017
Nagar Brahman	— 207.70	— 9.78	+ .136	+ .180	+ .0019
Kachhiya ..	— 465.50	— 16.98	— .189	— .037	— .0082
Bhavsar	— 284.20	— 19.10	— .234	— .023	— .0054
Kansara ..	— 342.00	— 19.26	— .199	— .030	— .0055
Non-Vegetarian					
Thakarda ..	+ 317.10	+ 4.87	— .285	+ .351	— .0053
Muslim ..	— 34.53	+ 9.61	— .110	+ .340	— .0039
Dhed	— 781.00	— 22.44	— .366	— .324	— .0107
Rajput ..	— 620.90	— 18.95	— .195	— .126	— .0054
Bhangi	—1023.40	— 38.80	— .363	— .437	— .0779
Valand	— 823.30	— 32.79	— .371	— .581	— .0100

Surplus + Deficiency —

Source : Food Survey of Principal Castes in Baroda State : Drs. Antia and Kale, Baroda Census, 1931, p. 307.

It is clear that calories required are more than sufficient only in case of Patidars, Audich Brahmans and Thakardas. Most of the other castes are deficient in the calory requirements. The analysis made by a biochemist in Madras of an average non-vegetarian Hindu diet also indicated a similar deficiency in calory value.[1] Coming to proteins, the analysis unfolds a sad tale. The vegetarians barring two exceptions—Lewa Patidar and Audich Brahmans—are all under-provided. The non-vegetarians are in this regard better off. With regard to calcium, dal, milk and curds constitute the principal sources of supply. The Patidars score again over other castes. The diets deficient in calcium, it will be found are deficient also in milk and curds, dal being included in a smaller or larger quantity. If some intrusion upon the field of biochemistry is permitted, it may be suggested that the typical tall and broad structure of Patidar has some co-relation with the sufficiency of his calcium supply which goes to give tone to his bony framework. Strong position obtains with regard to phosphorus supply. Only Kachhiya, Bhavsar and Kansara have a small deficiency. The most potent source of phosphorus is dal with wheat and bajri closely following. These being the principal items of dietary, the surpluses can be explained. Among non-vegetarians the position is less favourable. Iron appears to suffer general deficiency as great as that of proteins. Only the Audich Brahmans and the Nagars have a small surplus from .0007 to .0019 in a total requisite supply of .015 grams.

Considered in its broad aspects, the survey reports rather alarming results. The Audich Brahmans alone emerge successful through the test—though with a very narrow margin sometimes with the Lewa Patidars close upon their heels. The reasons for the deficit may be variously stated from rank poverty to ignorance of dietetic principles. These deficiencies in various essentials of food lead to low resistance power to the attacks of various diseases resulting in illness, poor health and premature deaths.

Two points should be noted here in connection with the dietary conditions. One is that people in recent years have taken to machine-polished rice, dal etc. and the fact that vitamins of nutritional value are wasted when these are machine-polished has been overlooked. The second is malpractices which affect the purity of food articles available in the market. Adulteration of food products is becoming more and more frequent. Ghee and milk are adulterated to a great extent. It should be remembered that purity of foodstuff is the first and fundamental requisite for the improvement of any dietary standard.

1. Robert Mac Carrison, "Food" (1928), p. 114.

MEDICAL FACILITIES

The adequacy or otherwise of medical and preventive organisations in the region is another aspect which should be examined. The existing condition is clearly brought out by the following table.

TABLE VII

MEDICAL FACILITIES IN MEHSANA DISTRICT: 1951

	The proportion of Medical Facilities to Population		
	Mehsana	India	U.K.
One Doctor to	4988.6 persons	6,300 persons	1,000 persons
One Nurse	26757.4 ,,	43,000 ,,	300 ,,
One Health Visitor ..	There are no Health Visitors	4,00,000 ,,	4,710 ,,
One Midwife	735831 persons	60,000 ,,	618 ,,
One Dentist	490554 ,,	3,00,000 ,,	2,700 ,,
One Vaidor Hakim ..	16351.8 ,,	—	—

Source : Compiled on the basis of Census figures, 1951 and Bhave Committee Report, Government of India.

The table is self-explanatory. The facilities regarding medical personnel in the district are very poor. The number of midwives and qualified dentists is highly inadequate. One fact which should also be remembered while interpreting these figures is that most of these medical personnel are situated in the urban areas. Hence the shortage in rural areas is still more acute. In the absence of well qualified doctors in rural areas, resort is often taken to the services of quacks who often worsen the cases rather than bring about any improvement.

The number of Government medical institutions in the district is 53. A list of hospitals and dispensaries with the number of beds and location is given in appendix No. 16. From the list, it is apparent that most of the dispensary facilities are also restricted to the big towns. Talukas like Sami, Santalpur and Radhanpur are very backward in this connection.

The table given in the appendix showing the number of Government maternity and child welfare centres, health visitors, and trained midwives further unfolds the true picture. There is not a single maternity and child welfare centre run by the Government in the district; nor are there any trained health visitors for the district. The number of trained midwives and 'dais' comes to 4 only and all of them are in the urban areas. The second statement showing the Government health services in rural and urban areas of the district also shows the same inadequacy. For the whole of the district there is only one medical graduate with public health qualifications working as whole time employee. There is no epidemic staff. The number of sanitary inspectors is only 14, while that of vaccinators—both male and female—comes to 24 only. There is neither any school medical officer nor any other type of health staff employed by the Government.

Looking to the size of the population of the district, its poor nutritive habits, the above facilities for curative and preventive health work in the region are highly inadequate. A wide emphasis, together with a number of other measures should therefore form an integral part of any programme for the health development of the region.

CHAPTER XIV

SOCIAL AMENITIES

HOUSING

It is difficult to get any statistics regarding housing conditions in the district. In the 1931 census, an effort was made to classify the types of houses in three different ways, viz. (1) Above Comfort, (2) In Comfort, and (3) Below Comfort. The condition revealed about housing in North Gujerat, which amounts to Mehsana district of the pre-merger time more or less, was as follows :—

TABLE I

PERCENTAGE OF HOUSES BY COMFORT LEVELS IN MEHSANA DISTRICT : 1931

	Above Comfort	In Comfort	Below Comfort
Rural	1.0	10.3	88.7
Urban	7.4	29.6	63.0
Total	2.4	14.3	83.3

Source : Census Report, Baroda State, 1931.

The above table indicates that in 1931, 88 per cent of the houses in rural areas and 63 per cent in urban areas were below comfort level. In the whole of the district only 2.4 per cent of the houses were above comfort level.

In 1941, an effort was made by the Baroda State Government to gather some more data on housing conditions by the method of sampling ; 21 villages were selected from Mehsana district. The data was then classified in various ways.

TABLE II

PERCENTAGE OF HOMESTEADS BY TYPES : 1941

Residential Houses	87.7	Official Schools etc.	0.3
Shop and residence combined ..	0.4	Public Buildings, Temple, Mosque	1.4
Warehouses	1.3	Others	6.4
Shops	2.5		
		Total	100

Source : Census 1941, Baroda State.

Altogether there were 87.7 per cent of the houses for residential purposes. In rural areas, it is quite apparent that houses used for other purposes would be less. In residential houses, animals like cows and buffaloes are also accommodated, and hence sanitary conditions are worsened to a very great extent. The proportion of shops and warehouses is less than 4.1, consistent with the North Gujerat rural economy of village type.

The following description of roofs and walls gives an idea about the modernity, if any, attained in housing.

TABLE III

DESCRIPTION OF ROOFS AND WALLS : 1941

Roofs	Percentage	Walls	Percentage
Terrace	0.3	Stone	*Nil*
Tiles	82.7	Brick	46.1
Iron	15.3	Mud	52.3
Thatched	1.2	Wood	0.2
Other Material	0.5	Other Material	1.4
	100		100

Source : Census 1941, Baroda State.

Houses with tiled roofs predominate upto 82.7 per cent, While thatched roofs form only 1.2 per cent. Thatched roofing indicates the lowest scale of comfort. Mud-built houses constitute the majority of the homesteads but brick built houses also form a substantial portion. In Mehsana, stone buildings, except for the railway quarters, hardly exist. What is more important than this is the examination of congestion in the houses. As the 1941 census report says, "the growth of houses has not been *pari passu* with the population, and the congestion in the houses has correspondingly increased from decade to decade." The following figures obtained by random sample survey of village housing clearly picture the situation.

TABLE IV

DISTRIBUTION OF POPULATION IN DIFFERENT TYPES OF HOMESTEADS IN MEHSANA DISTRICT

(*Sample only*)

Homesteads with	Percentage of Buildings	Percentage Population in homesteads	Pressure per house
One room ..	57.5	56.5	4.6
Two rooms ..	29.6	29.6	4.7
Three rooms ..	9.3	10.3	5.2
Four and More..	3.6	3.6	4.8

Source : Census 1941, Baroda State.

The above table shows that 57 per cent of the houses in rural areas consist of one room and 56 per cent of the population dwell in such houses. The proportion of dwellers in such houses amounts to 4.6 per house. In 1951, the average number of dwellers to a house in rural areas has increased to 4.8 from 4.6. Population per house in rural areas of different talukas is as follows at present.

TABLE V

NO. OF PERSONS PER HOUSE IN RURAL AREAS OF DIFFERENT TALUKAS

Vijapur	8.8	Kalol	4.6
Visnagar	4.8	Kheralu	4.8
Mehsana	4.7	Kadi	4.7
Sami	5.0	Chanasma	4.7
Radhanpur	5.4	Patan	4.9
Santalpur	5.3	Sidhpur	4.8
Harij	4.9	Total	4.8

Source : Census Tabulation Office, Bombay, 1951.

It seems from the above figures that in Vijapur taluka congestion seems to be the highest. The situation in Sami, Santalpur, Radhanpur and Harij also is not so very good. In Kalol taluka the pressure is the least.

Relief in Congested Villages

Early in 1936, the attention of the Baroda Government was drawn to the question of relieving congestion in villages. In a scheme developed by the Revenue Department, the government laid down principles for the extension of village sites. It was decided that where the village site area fell short of 30 bighas for the population of 700 or 43 bighas for 1,000 the 'gamthan' or the village residential site should

be held insufficient. In such villages suitable areas for expansion should be selected, acquired and divided into convenient plots, with suitable building regulations. How far this policy was put into practice in Mehsana district is not possible to trace.

WATER SUPPLY

The problem of the supply of pure water to villages is a very important one. In the whole of the district the availability of water varies from region to region. In Sidhpur, Patan, Chanasma, water is usually available at the depth of 30 feet, but in Harij and the adjoining areas water is not easily available even upto 100 feet depth.

SANITATION

We have studied in detail the housing conditions prevailing in the district and found them to be not very healthy. Even outside the houses, there are no good roads nor are there any proper conservancy arrangements. In many cases manure pits are found too near the dwelling places. The problem of rural sanitation like disposal of refuse, manure heaps, conservancy, suitable type of village latrines etc., needs special attention. Sanitation forms the principal function of Municipalities in towns and of Panchayats in villages. Even these bodies do not seem to pay proper attention to them.

ELECTRICITY

In the whole of the district, there are very few centres where electric power is generated and supplied to the public. All of them are in important taluka towns and serve the town population only. It was possible to get information for six companies situated at Kadi, Kalol, Mehsana, Patan, Sidhpur and Vadnagar. All the following tables are based upon information received from these companies only.

The following table gives a comparative idea of the annual per capita consumption of electricity in Mehsana district and compares it with other regions.

TABLE VI

PER CAPITA CONSUMPTION OF ELECTRICITY : 1948

	K.W.H.
Mehsana District	.8
Baroda State	3.10
Saurashtra	4.10
Bombay State	49.27
Indian Union	11.00

Compiled from Bureau of Economics and Statistics and Public Electricity Supply, All India Statistics, 1948.

The per capita consumption of electricity in Mehsana district is very low. The power generated by all the centres in 1948 was 1,459,000 K.W.H. out of which 1,212,000 K.W.H. was utilised. Compared to the previous year, there was no significant increase during the year 1948. The figures given above show the backwardness of the region. Even whatever little power is generated and supplied is in the urban areas of few towns only, and the rural side is totally neglected.

It is interesting to know how the electric power is utilised for different purposes. The table given below indicates the various types of uses for which power is consumed.

TABLE VI

CONSUMPTION OF ELECTRICITY BY DIFFERENT USES IN MEHSANA DISTRICT

(in 1000 K.W.H.)

Year	Domestic consumption	Commercial consumption	Industrial consumption	Public lighting	Others	Total
1947 ..	422	285	261	158	50	1,176
	35.9%	24.2%	22.2%	13.4%	4.3%	100
1948 ..	410	333	230	169	70	1,212
	33.8%	27.5%	19.0%	13.9%	5.8%	100

Source : Bulletin, Bureau of Economics and Statistics, July 1951.

The table indicates that electric power is used for domestic consumption to the extent of 35 per cent and for commercial purposes to the extent of 24 per cent. Public lighting and industrial uses form a very small part. The comparatively low standard of consumption for industrial purposes proves that the area is industrially backward.

All the undertakings are private concerns and no Government or municipal concern is in existence. The service requires great expansion in almost all centres. In order that tube well and lift irrigation can be made cheap and more successful it is desirable that power be supplied to rural areas at reasonable rates. To facilitate the availability of cheap power, it is essential that North Gujerat Electric Grid System be extended to Mehsana district.

CRIME AND POLICE

In an economically, socially and politically backward region, the problem of individual security is very important. The economic poverty, uncontrolled by any type of social responsibility and civic sense, leads to a higher index of criminal offences against persons and

property. Mehsana district, being economically a backward region and being inhabited by tribes like Thakardas, Kolis, Rabaris etc., who are much less conscious of their social responsibility, is a place which requires a much more detailed study of this problem.

It is difficult to find out the exact amount of insecurity which a person has to face, because often it happens that offences are not reported to the police at all. And particularly in such areas where police facilities are not very adequate, it is possible that a number of offensive activities may pass unnoticed. Hence, one has to remember that the figures given as *Cognisable Crimes* do not at all reveal the full picture. Perhaps it only shows the trend and predominance of the type of offence. We shall examine the following figures of crime from that point of view only. To assess the extent of total offences committed in the district a more comprehensive inquiry is perhaps the only resort.

TABLE VIII

STATEMENT SHOWING THE INCIDENCE OF COGNISABLE CRIMES PER 1,000 OF POPULATION IN MEHSANA DISTRICT : 1941-51

Year	Cognisable reported	Murders	Attempts to murder and Culpable Homicide	Dacoities	Robberies	Burglary	Cattle Thefts	Cases of stolen property	Total Service crime
1941 ..	1.04	.017	.0059	.0051	.014	.19	.24	.0017	.49
1949 ..	1.01	.009	.003	.009	.04	.26	.41	.0007	.74
1951	2.78	.03	.02	.04	.18	.58	.93	.01	1.79

Source : Annual Report, Administration of Police, Government of Bombay, 1951.

The table No. 8 shows that the amount of cognisable crimes reported has increased more than hundred per cent within the last ten years. The rise in different types of offences also is more or less uniform. Cattle lifting seems to be much prevalent in the area. Compared to the 1941 level, the total number of serious crimes in 1951 has increased by nearly four times. This shows a very serious state of affairs.

It is difficult to trace the causes of this increment in the number of crimes. But it seems that lack of adequate rains and recurrent famine conditions in the area has an important role in higher criminal offences. Moreover the facilities of police protection also seem to have decreased.

TABLE IX

POLICE FORCE IN MEHSANA DISTRICT

	1941	1951
One Policeman per ..	2.0 sq. miles	3.0 sq. miles
One Policeman per ..	842.4 persons	1086.8 persons
One Policeman per ..	0.8 Cognisable Crimes	3.9 Cognisable Crimes
Area	3,080 sq. miles	4,126 sq. miles
Population	1,235,898	1,471,662
Police Force	1,467	1,354
No. of Crimes ..	1,211	5,351

Compiled from figures from Annual Report of Administration of Police and Census, 1941-1951.

The above table very clearly brings out the present situation. The area and population of the district have increased, the number of crimes also has gone up nearly four times, while the police force has gone down. Thus it can be said that the area was more protected during the Baroda State Regime, and there was comparatively less insecurity of property and person compared to the present times.

We have no data about the qualitative work of the existing police force. But as was reported during our field investigation, a number of crimes go undetected. Even in those crimes which are reported, the action taken by the police is found to be not so very prompt and alert. The District Congress Committee, along with some important associations and persons had discussed this problem with D.I.G. on his visit to the district. They had put forward the following suggestions for the improvement of the situation. We fully concur with them.

1. The number of Police Stations should be increased and the criterion of "200 crimes per police station" should be adhered to as is done in other districts of Bombay State.

2. The Police Force should be increased. This is important because the population of backward castes, like Thakardas and others whose criminal tendencies are well known, is very great in the district.

3. Crime detection is sometimes delayed because of the lack of speedy communication and transport facilities. For this more vehicles should be provided for the police department of the district.

4. The higher officers should take more interest in detecting and stopping crimes, rather than to mere general supervision work.

CHAPTER XV

LOCAL SELF-GOVERNMENT

A comprehensive system of local self-government is indispensable for the success of democracy, not only because it offers the widest possible opportunity for the political education of people, but also because it is essential in the successful administration of many of the welfare services, which a progressive state should undertake.

THE PANCHAYATS

In the former Baroda State efforts were made, right from the inception of new land settlement policy, to preserve as much of traditional element of self-government as possible. In 1901, the elective system was introduced into the village panchayats, and more powers were given to them. The rules provided that every village with a population of one thousand and more should have a Panchayat of its own ; and those with a population of less than one thousand should be conveniently grouped together and have a common Panchayat. By the Act of 1920, the constitution of Panchayats was broadened, the franchise was extended and important powers in connection with sanitation, water supply and drainage, the supervision over public charities, the trial of civil and criminal cases and the right to tax people with the previous approval of the Government were conceded to these bodies.

TABLE I
VILLAGE PANCHAYATS IN MEHSANA DISTRICT

Taluka	No. of villages having Panchayat	Total No. of Villages
Mehsana	81	112
Visnagar	54	54
Kheralu	69	164
Kadi	109	119
Vijapur	90	102
Patan	134	137
Chanasma	99	111
Sidhpur	79	80
Kalol	83	92
Harij	28	38
Sami	—	88
Santalpur	—	75
Radhanpur	—	66
Total	826	1,238

The above table reveals the number of villages having Gram Panchayats in Mehsana district. In some talukas the number is less because the villages being small have a group Panchayat. The talukas of Sami, Santalpur and Radhanpur, which were not in the Baroda State did not have any system of local self-government.

Sources of Income

The main source of income of these bodies is the allotment of some portion of the local cess received by the Prant Panchayat *i.e.* District Local Board. Other miscellaneous sources allowed to them include (1) rent of the village site (2) sale proceeds from the auction of grass, fruit and fuel from government waste lands (3) levying of their own taxes with the sanction of the government and (4) receipt of an equal amount as a subsidy from the government whenever they raise any such amount either by taxation or by contribution for some work of permanent utility for the village.

After the merger of Baroda State, the Bombay Government has also taken steps to revitalise the village panchayats and improve their financial position. Additional sources of revenue have been placed at the disposal of the panchayats to enable them to function effectively. In addition to the compulsory levy of tax on houses and land not subject to agricultural assessment, village panchayats can levy all or any of the following taxes :— (A) Pilgrim tax (B) a tax on fairs, festivals and entertainments (C) a tax on sale of goods (D) octroi (E) a tax on marriages, adoptions and feasts (F) a tax on shops and hotels (G) a tax on premises where machinery is run by steam, oil or electric power for any purpose other than a domestic or agricultural purpose (H) a fee on markets or weekly bazars (I) a fee on cart stands.

Besides the powers vested in village Panchayats, the Government is further giving direct assistance. Provision has been made in the Village Panchayat Act to sanction a grant equal to 15% of the land revenue or 25% of the local fund cess collected in the village, whichever is greater. The Act also provides for the payment of a grant equal to three-fourths of the salary of the Secretary of Village Panchayat.

Guidance in Administration

The Bombay Government has set up machinery to give the necessary guidance in administration to the village panchayats. Special officers of the rank of Mamlatdars and honorary organisers have been appointed to advise and assist the village panchayats in the proper exercise of their powers and the performance of their duties. Steps have also been taken to expand the functions of the village panchayats with a view to enabling them to serve the local interests on a much broader

basis than before. By amending the Village Panchayats Act, additional powers and duties have been conferred on the panchayats. Most of the functions relating to village administration have now been given over to village panchayats. Some of these functions, such as water supply for domestic use, cleaning of public streets etc. are obligatory, while others like the improvement of agriculture, establishment of granaries, village libraries etc. are optional. In short, village panchayats are given all the opportunities to undertake and carry out almost all activities that can result in furthering the welfare of the village.

Nyaya Panchayats

One of the important functions that the village panchayats have to perform in the new set-up relates to the exercise of certain judicial powers. Nyaya Panchayats have been constituted from amongst the elected members of the panchayats. In the initial stages Nyaya Panchayats have been invested with powers to try minor offences and settle disputes of ordinary character, but provision has been made to confer wider powers on panchayats as they gain experience.

Water Supply

Water supply is an obligatory responsibility of a village panchayat. The Government has, however, embarked on a beneficient programme to provide adequate drinking water in villages with a population of 1000 and above in backward areas where there is no such facility.

To meet this necessity in full a comprehensive survey was made and a quinquennial programme was drawn up in 1931. A further ten years programme was framed in 1941 also. In the absence of sufficient data, it is difficult to know how much progress was made under the scheme.

MUNICIPALITIES

The total number of municipalities according to the census handbook, is 15 in 1950-51. The principal duties of municipalities lie in the direction of the provision and maintenance of public and utility services such as roads, dispensaries, water supply, sanitation and education. They have power to raise funds both by direct and indirect taxation.

The main items of expenditure of these municipalities are lighting, water supply, drainage, roads and conservancy. The extent and efficiency of the services rendered by these municipalities are limited. As the figures of incidence of Municipal taxation in some of the important centres reveal, the standard of taxation is low. The population, the revenue and the incidence of taxation of some of the important centres is given in Table No. 2

TABLE II

INCIDENCE OF MUNICIPAL TAXATION: 1944-45.

Name	Population	Income from taxes	Incidence per head
		Rs.	Rs. as. ps.
Mehsana ..	15,874	52,813	3 4 9
Visnagar.. ..	17,227	54,911	3 3 0
Kalol	14,670	45,843	2 11 9
Patan	36,380	90,950	2 7 8
Sidhpur	20,696	49,153	2 5 11

Source: Baroda Administration Report, 1944-45, p. 94.

The incidence of taxation has increased during the last few years in almost all the municipalities in the district. Sidhpur has recently levied a house tax. Unjha municipality also is following the step shortly.

In the absence of full information on various aspects, it is difficult to pass any comment on the working of municipalities in the district. But whatever little was experienced and seen during the field investigation does not give a very optimistic picture. It leads us to think that the internal conflicts and bickerings in the municipal councils in some cases, and the predominance of vested interests in others come in the way of democratic functioning and proper working of municipal affairs. In addition to this, the absence of an enlightened public opinion watching the municipal affairs, closely and critically has also affected the working adversely. It has created an attitude of irresponsibility among the municipal members at many places, and has slackened the ideal working of municipalities.

THE DISTRICT LOCAL BOARD

The district local board or prant panchayat is the central organisation of the district. Works beyond the sphere of village panchayats are carried out by the prant panchayat. A district local board has mainly to deal with the larger roads not placed under the public works department and generally with all the works not exclusively belonging to a single village, as well as the works which are beyond the capacity of a village.

The income of district local board is derived from :—

(*a*) Local cess.

(*b*) A surcharge on land revenue at the rate of two annas per rupee of land revenue paid to Government.

(*c*) A flat rate of one rupee on individuals deriving non agricultural income above Rs. 250 and below Rs. 750.

(*d*) Such contribution as the Government choose to make.

Some steps have been taken by the Bombay Government to augment the financial resources of the district local boards by giving them statutory and other grants. The boards have power to levy with the sanction of the Director of Local authorities, any tax other than a toll on vehicles and animals which the State legislature has power to impose on the State. In addition, substantial grants are given by the Government for education, improvements of communication, water supply, village sanitation and for proper equipment and maintenance of dispensaries and on account of abolition of tolls. Grants are sanctioned on a liberal scale to the local boards for the purposes of local public works and for construction of village approach roads and culverts and bridges on the main arteries of communication in rural areas. In addition, the Government as a measure of further relief to the district local boards, gives a grant in aid equal to 50% of the expenditure incurred by them on account of payment of dearness allowance etc. to their employees.

Village panchayats, municipalities and district local board are the basic institutions in the district. They serve as a good training ground for the people in managing their affairs. The prant panchayat is playing a very important role for the development and growth of village panchayats. All these institutions are of great importance in the administration. But a large sphere of work is still awaiting the activities of these bodies.

CHAPTER XVI

SUMMARY AND CONCLUSIONS

After studying in details the various aspects of economic and social life in Mehsana district, it will be worthwhile to summarise some of the important observations of the study. The following paragraphs indicate in brief the character and extent of various problems facing the district.

The district is largely rural in character. Nearly 61% of the population is employed in agricultural production. The rate of urbanisation is gradually increasing. While the number of villages with the population of less than 500 persons is decreasing, the number of villages with a population of 1,000 to 2,000 is increasing. Urbanisation is more of a commercial character rather than industrial. The pattern of population shows a high predominance of the backward class community. The social and economic problems of this class need special attention in any programme of development.

The district is a chronic famine area. Every fourth year is a famine year and every third a scarcity year. Nearly 61% of the total area and 41% of the total population are highly susceptible to famine.

In some parts of the district the soil is good and if proper water facilities are given good crops can be obtained. On the western side saline contents are very high in the soil, and soil erosion due to wind is quite significant. It is also feared that the Runn of Kutch is advancing. In the eastern parts and particularly on river sides there is a great deal of soil erosion due to water. Immediate steps are necessary to check the same.

As rainfall is low, double cropped area is small. The extent of current fallows is also small. There is a large area which can be brought under cultivation. 20% of the uncultivated area is cultivable waste, while 58% is under pastures, grazing etc., some parts of which can also be brought under cultivation. In spite of these possibilities, it is regrettable that there is no land reclamation scheme in operation.

Mehsana district is predominantly a food crop area. Food crops form 85% of the cultivated land. But a major part of this land is under inferior and coarse grains like jowar, bajri etc. Yields are low in all products, except wheat. Wheat yields are high because of well irrigation in some parts. On the whole, the general tendency of yields over the last 30 years is that of gradual decline.

Besides uncertain and scanty rainfall there are various other reasons which contribute to the poor yields in agricultural production. There are only 57 ploughs and 22 carts per 100 cultivators. The number of bullocks has also decreased. Area cultivated per bullock has increased from 11 bighas in 1910 to 31 bighas in 1950. There is

a good demand for fertilisers, but it was found that there was not enough supply available in the district. An efficient distribution of quality seeds is desirable. Niphad and Kanphad wheat and 207 bajri and Wagad cotton seeds are found suitable for the region. One fact that is revealed is that there is no conspicuous use of modern insecticides and germicides in the district. Extensive agricultural propaganda is necessary.

A noteworthy and commendable feature in the district is that 77% of the cultivators are peasant proprietors. The size of holding, on an average, is very small. There is a considerable portion of cultivators who are not farmers professionally. Their efficiency, compared to that of Kanbis, who are professional cultivators, is very low. The extent of tenancy is small. Proportion of share-cropper is high. But during the last thirty years the tendency towards tenancy seems to be on increase. There is an increase of holding with Kanbis—the most efficient cultivators of the district. But that is not the case with Thakardas. More land is going into the hands of backward castes who are less efficient in farming. The size of holdings is very small. More than 40% of holdings are below 0-5 acres and more than 38% of holdings are below 5-25 acres. The tendency is towards an increase in the size of holdings of 0 to 5 and a decrease in 25 to 100. Holdings larger than 100 bighas are not affected at all. The economic holding fixed for the district is 15 acres for irrigated and 25 to 35 for dry area. More than 45% of the holdings are uneconomic by the norm.

The importance of proper maintenance and breeding of livestock is not realised by the people of the district which is well known for its Kankrej breed. There is both qualitative and quantitative deterioration in livestock. There is a decline in the number of cattle over last 30 years. The average daily supply of milk per individual has decreased from 0.95 seers in 1921 to 0.86 seers in 1951. . Age of first calving has increased from 2½ years and 3½ years to 4 and 6 years. Calving interval has increased from 15 and 16 months, to 18 to 36 months. The ranch system of maintaining livestock requires a change. Colonisation and settlement schemes do not appear to be so very satisfactory. The whole problem requires a detailed investigation and well planned policy. One of the outstanding reasons of this deterioration is the failure of the ranch system of maintaining livestock to adjust itself to changing circumstances. The efforts made to improve the situation do not seem to have been very successful. It is observed that there is good scope for sheep-breeding and wool-rearing and development of dairy industry in the district.

In a predominantly agricultural region, the importance of water need hardly be stressed. In Mehsana district, rainfall is low and is

decreasing over every year. It is not well distributed nor well-timed and is always uncertian. Irrigation is mostly done by wells. The number of wells also is small. A survey of subsoil water reveals an ample supply of underground water which should be tapped by all the means possible. There are good many irrigation tanks which are, at present, not in use. But if they are repaired they can be of immense benefit to the cultivators. Tube-well borings would help considerably. Co-operative societies for irrigation are also desirable. A scheme of tube-well irrigation on co-operative basis is suggested in the text. The Sabarmati River Project, Inundation Scheme of Radhanpur and small bunds on rivulets would help in the betterment of the region.

The problem of efficient marketing is very important. Products like Isabgul, Castorseeds, Variali, Cumin etc. have good foreign markets. Marketing at present is unorganised and the producer is exploited by the village merchants. The problem of finance for marketing is also acute. The rates of interest vary from 5 to 25 per cent in some cases. Malpractices exist to a great extent and affect price spread and the quality of the commodity.

As far as the transport and communication services are concerned the district is very backward. Railway facilities are, on the whole, fairly well except in talukas like Radhanpur, Sami and Santalpur. However, some important links require to be joined up. Facilities of roads are extremely poor. There is a metal road of only 3 miles length in the whole of district. Absence of good roads affects marketing very adversely.

The co-operative movement in the district has developed well in some parts only. On the whole the movement is weak and not well-developed. The number of agricultural credit societies is large but it covers only 8% of the rural population. There is a good proportion of deposits in the working capital of these societies but many of them are not efficiently managed and are stagnant. The progress of co-operation in other spheres of life is not much noticeable. The Central Bank, in the past, has not played its proper role. Inspection and supervision of the societies has been very slack. The idea of forming multipurpose societies has not gained much ground.

A study of rural and cottage industries shows a majority of them in a declining stage. Handloom weaving and spinning and tanning and leatherwork are the important cottage industries. Most of them face the problem of lack of finance and improved technique, and absence of good markets. Efforts are being made to form co-operative societies among the artisans.

The standard of literacy is 25% with some variation in rural and urban areas. Literacy among tenant cultivators is only 9.5%. From the point of view of educational standards, the district

is very backward. The number of persons who have studied above matriculation standard is extremely low. Educational facilities available at the primary level are good, but do not seem to bear the results expected. It is desirable that efforts be made to increase the educational standard as a whole. Adult education and library movement require special attention.

In the matter of public health, the standard is also very low. Child mortality is very high. Medical facilities available in the district are not upto the desirable standard. The dietary habits also require improvement. Housing conditions are very bad and unhealthy and the provision of pure water to the villages is not adequate.

It may be observed that the problem of safety and security of person and property in the region has become very acute. The number of crimes, particularly of a serious nature, have increased nearly four times.

The picture that emerges from this study of the various aspects of the social and economic life of the people is a static one. It reveals the existence of a perennial struggle on the part of the people to overcome various obstacles and attempts to channalise such efforts for the betterment of society as a whole. It reveals failures as well as achievements of Government and the people in different aspects of life. It is desirable that some beneficial lessons be derived out of such experience of the past, so that a conscious effort at the betterment could be evolved.

The survey reveals that failures in many aspects have been due to lack of proper adjustments and organisation, absence of essential research and planning and deficiency in co-ordination and continuity of action. Hasty and haphazard attempts at development without any detailed inquiries, lack of proper administration and absence of consistency in execution have made many projects fruitless in the long run.

The failure of so many irrigation tanks in the district reveals a sorry tale of defective investigation and compilation of insufficient and unreliable data about the project. It is said that in taking up the Kadarpur tank the engineer concerned not only made a lamentable mistake as to the extent of catchment area but also failed to allow for the porosity of the soil. Proper planning and prerequisite research on the subject in most of the developmental aspects have remained conspicuous by their absence.

In problems like that of livestock resources, soil erosion etc., efforts for improvement were made in the past. But inconsistency in execution, and lack of forethought have been responsible for the failure of many efforts. There has been a positive deterioration in

the qualitative and quantitative aspect of livestock. No well-thought-out and organised effort has been made to improve it. Inefficiency and inconsistency in execution of policies has led to the giving up of some of the very important projects like sheep rearing and wool producing at Patan, soil conservation project at Hirapura, Ghee grading scheme etc. Absence of proper organisation and co-ordination of different policies have resulted in a gradual decline of cottage and rural industries, and slow development in transport and communication services.

One of the outstanding factors that has been responsible for this state of affairs is the absence of co-operation on the part of the public. No effort seems to have been made by the Government to seek the confidence and co-operation of the public at large. Many schemes and policies have been tried by the Government alone with its own executive officers without encouraging and soliciting public co-operation. The problem of Rabari Colonisation and Settlement has become so acute only because public opinion for the same is not properly developed. Even at present, efforts at measures of soil conservation, regulation of marketing and promotion of co-operative societies in various fields of life are not getting proper response from the people only because they are not aware of the good that would accrue out of these measures. The blame for such a slow and weak growth of the co-operative movement as a whole can also be attributed to lack of propaganda and development of public opinion.

Any programme of development would require improvement in the administrative practices as well as set-up. To implement any plan or policy, it is desirable to have a clear understanding of the objective, the necessary financial resources, adequate administrative machinery and in each field the co-operation of those with whose help it is to be implemented. It is important that, consistent with economic policy, and objectives aimed at, there should be the widest possible devolution of functions for the implementation of any programme for development. The aim should be to ensure exercise of local responsibility and initiative.

It would not be proper here to analyse and discuss the administrative policy of the Government as a whole, nor would it be advisable to go into the details of the set-up of executive machinery functioning under the Central or State Government. We will confine ourselves to the administration within the district only and see how far changes can be made so as to help in the economic development of the region.

It is observed in the survey that a considerable majority of the population is scattered in tiny villages, isolated from the urban seats of Government due to lack of transport and communication facilities.

This makes the problem of administration at the village level extremely difficult. It should be remembered that it is in these villages that the bulk of national wealth is produced. Thus from the point of view of production as well as welfare, a proper administration at the village level is of great significance.

Any programme of rural development would require comprehensive action in every sphere of life of the village people and it is essential that the administrative machinery should be such as would inspire trust and confidence among people and get their ready co-operation in the ameliorative measures introduced by Government. The first and the most immediate task of Government is, therefore, to remove this distrust and bring about a new understanding between the cultivators and the Government agents. Unless this is done it will not be possible to make any headway with the development measures planned by Government. The first essential is to make the people sympathetically receptive to all Government measures. This is the biggest administrative problem Government has to face. The following suggestions are made keeping this in view.

(1) Village Panchayat should be made an effective instrument of rural administration.

(2) District Local Board should be entrusted with the responsibility of organising and supervising the Panchayats.

(3) The functions of the District Local Board should be deliberative, the executive functions being placed in charge of the Collector.

The success of any plan for Rural Development will largely depend upon the appropriateness of the agencies created for the purpose. They should strive to stimulate local interest in the project, and train local talent so that in course of time the people are able to manage their own affairs. After a time they should be able to assess their deficiencies, clearly formulate their demands and insist upon getting assistance and relief from Government.

For an allround development of rural life and economy three agencies are required for every village.

(*a*) Panchayat for administration and social life.

(*b*) A multi-purpose co-operative society for economic development.

(*c*) Village school for education and cultural activities.

We consider these agencies of immediate importance for laying the foundation of a progressive corporate life in which the people are able to manage their own affairs. If the Panchayats are put on right lines they will provide a foundation for more efficient working of the other agencies.

VILLAGE PANCHAYATS

There should be a statutory Village Panchayat for every village or a group of villages and if need be a single Panchayat for a very backward tract for the whole tehsil or a section of it.

The Panchayat should be given certain revenue arising out of the management of village properties, a portion of land revenue collected from the area or some miscellaneous revenue derived from the levy of taxes, cesses or licence fees. It may levy taxes or cesses but the main contribution will come from the manual labour contributed by each able-bodied citizen.

Our main suggestion is that it should be the function of the District Board to see that the Panchayats are properly organised and function on right lines. It should employ the necessary staff for the Panchayat and train it and see that the Panchayats are properly constituted by elections and the necessary equipment for running them is made available.

After the working machinery is created, the first act of the Panchayat should be to prepare a list of the requirements of each village arranged by priorities and prepare a budget. It should be divided into three sections : (a) What can be managed from its own resources. This may be again divided into two sections each : money and manual labour, (b) what assistance can be obtained from the District Board and (c) what can be obtained from the State as a gift or as a loan. Each Panchayat should prepare a programme of work.

There may be works which can be carried out in co-operation with the neighbouring village. Therefore it is preferable to have a federation of all the Tehsil Panchayats at Taluka stage which should prepare a full programme for all the villages and arrange for its execution in consultation with the District Board. The District Board should provide the necessary expert staff and render general help and guidance in all directions—sanitation, agricultural services, execution of works of public utility etc. It should provide the staff for their guidance and inspection. As a matter of fact it should be the primary duty of the District Board to foster the Panchayats in the area. Since the area would be too big, it would be advisable to form Taluka associations for administration at the intermediate stage.

Government should also prepare a programme as to what types of subsidies or help they can give to the Village Panchayats for various purposes.

After an efficient village organization is created, the next step would be to form Taluka Federation of the Panchayats as a liaison between the village and the district. There is an unlimited scope for development in all spheres and the Panchayats can take up more and more functions as they develop.

District Local Board

The next step is to reorganise District Local Board. To make the institution of District Local Board more efficient and useful from the point of view of strengthening the local self-government working in the district, it is desirable that some changes are made in its organisation. The District Local Board at present carry out certain delegated functions in the sphere of public works, health, sanitation and education. The Bombay State have taken over the management of schools from District Boards as their administration was inefficient. In the Public Works Department there is no need to have two agencies working in a district, the District Board for small works and the P.W.D. for the larger ones. The duplication should be avoided and the small works should be handed over to the P.W.D. for execution or to Village Panchayats. The District Board should look after the development of the area as a whole, prepare the programme of activities and make budgets for their execution.

The functions of the Local Board should be :

(1) To organise Village Panchayats, to supervise their working and to foster their growth, bringing to their notice all the facilities the State is prepared to provide for their working.

(2) To see that the services provided by the State function adequately and reach all the people. We have enormous problems to cover ; social, economic, administrative and in each of them the District Board can help the people. They should prepare a programme for each village, for inter-village works and activities ; see that the necessary funds are made available and are properly used.

The Board may work through special committees for agriculture, for education, for sanitation, for housing and health, for development of panchayats and for cottage industries. Here all district heads of all Government Departments should co-operate in framing part of the programmes and in their execution. We have such a variety of work to be carried out that those members who have a flare for social service in any sphere will find ample scope.

The executive personnel of the District Board should be under the Collector and should work under his guidance. He should be given a qualified person as chief officer in charge of the office and to look after the day to day working of the Board.

The successful working of the Panchayats will depend upon the qualifications of the State Registrar of Panchayats. There are Panchayat Officers who are thoroughly incompetent, with no initiative of any kind, and mere routine men. There are others who kill initiative on the part of the people. Therefore, Government should take good care as to whom they put in charge of this new institution.

If the village Panchayats and District Boards are constituted on the lines stated here, there will not be any need for another parallel institution like the District or Taluka Rural Development Boards. The District Boards, since they are elected, would be a multi-party organisation while the Rural Development Board being nominated would be predominantly reflecting the views of the majority party. As such there would ensue frequent conflicts between the two agencies. Therefore the separate Development Boards should be done away with. A strongly well-knit set up of local bodies should be of greater use than merely *ad hoc* voluntary associations.

APPENDIX NO. 1

RECONSTITUTION OF THE DISTRICT

1. The areas comprising the talukas of Radhanpur, Sami, Santalpur, two villages of Wadgam taluka, 16 villages of Kankrej taluka and one village of Palanpur are excluded from Banaskantha District and are included in Mehsana District.

2. 75 villages out of Gadhwada Mahal and five villages of Idar taluka of Sabarkantha District are excluded therefrom and included in Mehsana District.

3. 20 villages of Kalisan Thana, 2 villages of Palaj taluka, 6 villages of Katosan State, 16 villages of Mansa and Varsoda States and four other villages of Daskroi taluka and one village of Viramgam taluka of Ahmedabad District are excluded therefrom and included in Mehsana District.

4. Areas comprising the Dehgam taluka and the villages of Attarsumba Mahal lying on the west of Vatrak river of Mehsana District are excluded therefrom.

5. The villages of Attarsumba Mahal lying to the east of Vatrak river and the village of Sandesar of Mehsana District are excluded from and included in Kaira District.

6. The village Nabhoi of Kalol taluka and Khoraj Nadoda of Kadi taluka of Mehsana District are excluded and included in Ahmedabad District. The village Saroli of Vijapur taluka of Mehsana District is excluded and included in Sabarkantha District.

APPENDIX NO. 2

MINERAL RESOURCES OF MEHSANA DISTRICT

Material	Locality, nearest Railway Station	Quantity	Industrial Value	Reference	Remarks
1	2	3	4	5	6
Metals					
1. Iron ..	In eocene rocks about half a mile to the south of Vijapur, Vijapur Taluka	A thin small bed	*Nil*	Iyer's Mineral Resources of Baroda, p. 104	..
2. Iron ..	Bed of Haematite iron near Phudhera, Vijapur Taluka	..	..	Do.	..
Chemicals					
3. Natural Soda	Mev and Khookas in Mehsana taluka and Kada in Visnagar taluka, Mehsana District	The extent of Alkali ground is nearly a sq. mile near Khookas. The aggregate area in the district is likely to be several miles	The refined soda may be used in the manufacture of glass and soap and also for washing purposes	Iyer's Mineral Resources of Baroda, pp. 48, 58	

Glass, Porcelain, Fire bricks					
4. Sandstone, Sand	Fine grained stone is found on the right bank of the Sabarmati near Pedhamali. The coarser grained stone under the above series at this point is noted in several of the iron valleys called Kothars. Vijapur Taluka	Large quantity	A fine grained sandstone which can be used in the manufacture of bottles and bangles. It is also suited as a moulding material for the founding work. Can also be used as blasting sand. The coarser grained stone may be used for the manufacture of sheet and plate glass. The occurrence of China clay at Vijapur (5 miles) will enable various mixtures to be prepared suitable for several clay industries, as firebricks, glass pots and other factory wares, besides porcelain	Iyer's Mineral Resources of Baroda, pp. 10, 16, 21, 26	The coarser kind of sandstone of Pedharmali is as good as that of Tonlainbleaw which is considered the purest sand for glass manufacture
5. China Clay	On the right bank of the Sabarmati river about a mile S. E. of village of Ransipur, Vijapur taluka, Vijapur	Known extent of the deposit is 975 ft. by 170 ft. and thickness 3 ft. Qty. available 27,000 tons. Extensive deposits are likely to be found in the vicinity	Raw material for the manufacture of fire-bricks, glass pots, porcelain and various clay products. Also useful for Portland cement industry of pure lime stone is available in the neighbourhood	Iyer's Mineral Resources of Baroda, pp. 1, 8, 44	

APPENDIX NO. 2—*Contd.*

Material	Locality, nearest Railway Station	Quantity	Industrial value	Reference	Remarks
1	2	3	4	5	6
Colourwash, Pigments and Colours					
6. Yellow and Red Ochres	Near Ransipur, Vijapur Taluka	Large quantity	For the preparation of mineral paints and ultramarine colours and flooring and roofing tiles	Iyer's Mineral Resources of Baroda, p. 7	..
Building Stones					
7. Granite	Near Virpur in the bank and bed of Sabarmati River, Vijapur Taluka	A small area of 2¼ miles from N. W. S. in its extreme length	Pale pink to greyish pink stone of great durability, remarkable for its intrinsic beauty. Capable of being quarried in large masses and susceptible to very high polish	Footes, Geology of Baroda, pp. 22, 23, 117	..
8. Sandstone	At Pudhera in Vijapur taluka	Larger quantity	"Slabs, pillar, water troughs etc. may be made. The stone may be sewn into bricks, burnt and tried as fire-bricks and refractory blocks and be made into similar objects of a refractory nature."—Iyer	Footes, pp. 67, 130 Iyer, pp. 86, 89	This stone is soft enough to admit of being carved into ornamental objects

APPENDIX NO. 3

DISTRIBUTION OF POPULATION IN VARIOUS LIVELIHOOD CLASSES IN MEHSANA DISTRICT: 1951

	Agricultural Classes			Non-Agricultural Classes				
Taluka or Peta	Cultivators of land wholly or mainly owned and their dependents	Cultivators of land wholly or mainly unowned and their dependents	Cultivating Labourers and their dependents	Non-Cultivating Owners of land and Agricultural Rent Receivers and their dependents	Production other than Cultivation	Commerce	Transport	Other Services and Miscellaneous Sources
1	2	3	4	5	6	7	8	9
District Total ..	6,93,134 (47.1)	65,689 (4.5)	83,688 (5.7)	55,092 (3.7)	2,06,516 (14.0)	1,18,030 (8.0)	22,410 (1.5)	2,27,103 (15.5)
Chanasma ..	62,499 (54.9)	3,878 (3.9)	4,468 (3.9)	6,601 (5.8)	13,432 (11.8)	7,888 (6.9)	979 (0.9)	14,092 (12.4)
Harij ..	14,448 (42.9)	2,658 (7.9)	1,503 (4.5)	1,244 (3.6)	3,424 (10.2)	3,573 (10.6)	253 (0.8)	6,552 (19.5)
Kadi ..	55,985 (45.5)	3,918 (3.2)	10,403 (8.4)	5,844 (4.7)	18,439 (15.0)	8,235 (6.7)	1,929 (1.8)	18,394 (14.9)
Kalol ..	63,748 (41.2)	5,090 (3.3)	12,428 (8.0)	7,497 (4.8)	28,717 (18.6)	10,934 (7.1)	2,674 (1.7)	23,710 (15.3)

Kheralu ..	77,285 (53.9)	7,788 (5.4)	5,536 (3.8)	4,668 (3.3)	18,210 (12.7)	9,559 (6.6)	1,313 (0.9)	19,151 (13.3)
Mehsana ..	71,876 (48.4)	3,214 (2.2)	8,633 (5.8)	5,926 (4.0)	16,904 (11.4)	12,026 (8.1)	5,781 (3.9)	24,218 (16.2)
Patan ..	78,879 (46.8)	6,160 (3.7)	11,419 (6.8)	4,862 (2.9)	22,183 (13.2)	15,319 (9.1)	1,565 (0.9)	28,037 (16.6)
Radhanpur ..	23,710 (51.9)	365 (0.8)	765 (1.7)	552 (1.2)	6,976 (15.3)	3,688 (8.1)	645 (1.4)	8,990 (19.6)
Sami ..	25,981 (53.8)	542 (1.1)	3,376 (7.0)	1,592 (3.3)	8,474 (17.6)	2,580 (5.3)	364 (0.8)	5,339 (11.1)
Santalpur ..	2,286 (6.3)	19,171 (53.0)	302 (0.8)	927 (2.6)	4,812 (13.3)	2,328 (6.4)	142 (0.4)	6,209 (17.2)
Sidhpur ..	71,453 (45.9)	4,839 (3.1)	6,945 (4.5)	4,382 (2.8)	23,302 (15.0)	18,177 (11.7)	2,536 (1.6)	24,097 (15.4)
Vijapur ..	95,547 (46.8)	5,654 (2.8)	12,594 (6.2)	8,065 (4.0)	28,017 (13.7)	16,724 (8.2)	3,120 (1.5)	34,302 (16.8)
Visnagar ..	49,427 (51.6)	2,412 (2.5)	5,316 (5.5)	2,932 (3.1)	13,626 (14.2)	6,999 (7.3)	1,109 (1.2)	14,012 (14.6)

Source: Census Tabulation Office, Bombay.

APPENDIX NO. 4

LIVELIHOOD CLASSES (AGRICULTURAL)

Taluka or Peta	Total of col. 1 to 4	Cultivators of land wholly or mainly owned and their dependents %	Cultivators of land wholly or mainly unowned and their dependents %	Cultivating Labourers and their dependents %	Non-Cultivating owners of land and agricultural rent-receivers and their dependents %
		1	2	3	4
District	8,97,603	77.2	7.3	9.3	6.2
Chanasma	77,446	80.7	5.0	5.8	8.5
Harij	19,853	72.8	13.4	7.6	6.2
Kadi	76,150	73.5	5.1	13.7	7.7
Kalol	88,763	71.8	5.7	14.0	8.5
Kheralu	95,277	81.1	8.2	5.8	4.9
Mehsana	89,649	80.2	3.6	9.6	6.6
Patan	1,01,320	77.9	6.1	11.3	4.7
Radhanpur	25,392	93.4	1.4	3.0	2.2
Sami	31,491	82.5	1.7	10.7	5.1
Sidhpur	87,619	81.5	5.5	7.9	5.1
Santalpur	22,686	10.1	84.5	1.3	4.1
Vijapur	1,11,860	85.4	5.1	11.3	7.2
Visnagar	60,087	82.3	4.0	8.8	4.9

Source: Census Tabulation Office, Bombay.

APPENDIX NO. 5

SOIL OF MEHSANA DISTRICT—ANALYTICAL RESULTS: 1952—53

S.No.	Village	(in percentage) Stone	(in percentage) Moisture	(in percentage) less on ignition		(in percentage) Humus		(in percentage) Total Nitrogen		(in percentage) Avail. K20		(in percentage) Avail, P205		(in percentage) Carbon	
				Original	Oven dry fine M.	On original	On oven dry fine	On original	On oven dry fine	On original	On oven dry fine	On original	On oven dry fine	On original	On oven dry fine
	Mehsana District									N-3-B Wheat					
1.	Pudgaon	.. ..	0.90	1.44	1.45	0.09	0.09	0.036	0.039	0.039	0.040	0.067	0.068	0.144	0.145
2.	Gothua	.. ..	0.76	2.56	2.57	0.23	0.23	0.049	0.050	0.058	0.059	0.052	0.52	0.384	0.387
3.	Kheralu	.. ..	0.64	1.44	1.45	0.09	0.09	0.032	0.032	0.012	0.013	0.005	0.005	0.084	0.084
4.	Dabhoda	.. ..	0.72	1.60	1.61	0.34	0.35	0.053	0.054	0.088	0.028	0.060	0.06	0.36	0.36
5.	Kambli	.. ..	1.08	1.72	1.74	0.30	0.30	0.032	0.032	0.018	0.018	0.015	0.015	0.21	0.22
6.	Shidpur	.. ..	0.72	1.26	1.27	0.28	0.28	0.028	0.029	0.010	0.010	0.021	0.022	0.096	0.097
7.	Hansapur	.. ..	0.68	2.00	2.01	0.29	0.30	0.055	0.056	0.049	0.050	0.052	0.052	0.21	0.21
8.	Ruppur	.. ..	0.09	1.76	1.77	0.16	0.16	0.046	0.047	0.038	0.039	0.038	0.038	0.14	0.15
9.	Saunder	.. ..	0.90	1.84	1.85	0.21	0.21	0.072	0.073	0.048	0.048	0.063	0.064	0.24	0.24
10.	Langhanj	.. ..	0.52	1.26	1.27	0.11	0.11	0.024	0.024	0.026	0.027	0.099	0.059	0.06	0.06
11.	Kukarwada	.. ..	0.96	1.84	1.85	0.18	0.18	0.036	0.037	0.018	0.019	0.071	0.072	0.14	0.14
12.	Lodhra	.. ..	0.94	1.68	1.69	0.18	0.18	0.034	0.034	0.030	0.030	0.063	0.064	0.21	0.22

Source: Soil Chemist, Government of Bombay, Poona.

APPENDIX NO. 6 (*a*)

LAND UTILIZATION IN MEHSANA DISTRICT: 1951-52

(In acres—actuals)

Taluka	Area by village paper	Gross cropped areas	Area cropped more than once	Net cropped area	Current and other fallows	Total cultivated area	Barren and uncultivated waste	Land put to non-agricultural use	Cultivable waste	Permanent pasture and other grazing land	Forests	Land under misc. trees, crops, grazing, etc.	Total uncultivated area
Mehsana ..	1,94,339	1,63,817	6,611	1,57,706	6,557	1,64,263	622	9,096	5,727	12,522	..	2,109	30,076
Visnagar ..	1,10,182	1,01,150	10,564	90,586	5,693	96,279	1,402	6,771	4,625	1,105	..	..	13,903
Kheralu ..	2,20,477	1,54,212	4,365	1,50,147	21,689	1,71,836	6,047	4,950	1,024	17,790	15,497	3,333	48,641
Patan	2,57,785	1,92,712	1,794	1,90,914	14,691	2,05,605	4,843	2,569	10,278	33,463	..	1,027	52,180
Chanasma ..	2,19,300	1,85,142	..	1,85,142	16,867	2,02,009	2,525	1,400	12,332	1,009	..	25	17,291
Sidhpur ..	1,66,309	1,29,886	12,565	1,17,321	3,604	1,20,925	4,383	3,228	6,722	30,780	..	271	45,384
Harij	1,00,724	73,001	..	73,001	11,212	84,213	5,209	1,393	3,170	6,739	..	..	16,511
Radhanpur ..	1,38,912	86,187	..	86,187	1,178	87,365	..	1,716	17,178	12,571	1,716	18,366	51,547
Santalpur ..	4,00,000	1,06,581	..	1,06,581	1,36,107	2,42,688	9,300	10,802	37,000	1,00,210	..	..	1,57,312
Sami	3,50,855	1,72,883	..	1,72,883	36,259	2,09,142	7,905	1,028	29,969	20,130	..	82,681	1,41,713
Kadi	2,06,755	1,62,469	10,151	1,52,307	6,456	1,58,763	1,409	11,498	10,390	23,819	..	876	47,992
Kalol	1,73,295	1,36,132	12,591	1,23,541	8,711	1,32,252	3,887	5,150	2,919	19,570	..	9,517	41,043
Vijapur ..	2,28,694	1,90,636	19,862	1,70,774	8,289	1,79,063	900	20,218	4,628	16,430	3,650	3,805	49,631
Total District ..	27,67,627	18,54,808	78,003	17,77,090	2,77,313	20,54,403	48,432	79,819	1,45,962	2,96,138	20,863	1,22,010	7,13,224

APPENDIX NO. 6 (*b*)

LAND UTILIZATION IN MEHSANA DISTRICT: 1951-52

(Percentage)

Taluka	Area by village paper	Area cropped more than once	Net cropped Area	Current and other fallows	Total Cultivated area	Barren and cultivable waste	Land put to non-agri. use	Cultivable waste	Permanent pasture and other grazing land	Forests	Land under misc. trees, crops, grazing, etc.	Total uncultivated area
	1	2	3	4	5	6	7	8	9	10	11	12
Mehsana	7.0	3.7	96.0	4.0	100.0	2.0	30.1	19.0	41.6	..	7.3	100.0
Visnagar	3.9	10.9	94.0	6.0	100.0	10.0	48.7	33.4	7.9	..	..	100.0
Kheralu	8.0	..	87.3	12.7	100.0	12.4	10.1	2.1	36.5	32.1	6.8	100.0
Patan	9.3	2.5	92.9	7.1	100.0	9.2	4.9	19.6	64.4	..	1.9	100.0
Chanasma	7.9	..	91.7	8.3	100.0	14.6	8.0	71.5	5.8	..	0.1	100.0
Sidhpur	6.0	10.3	97.1	2.9	100.0	9.6	7.1	14.8	68.0	..	0.5	100.0
Harij	3.6	..	86.7	13.3	100.0	31.5	8.4	19.1	41.0	..	..	100.0
Radhanpur	5.0	..	98.7	1.3	100.0	..	3.3	33.3	24.3	3.3	35.8	100.0
Santalpur	14.4	..	44.0	56.0	100.0	5.9	6.8	23.5	63.8	..	..	100.0
Sami	12.6	..	82.7	17.3	100.0	5.3	0.7	21.1	14.2	..	58.7	100.0
Kadi	7.4	6.3	96.0	4.0	100.0	2.9	23.9	21.6	49.8	..	1.8	100.0
Kalol	6.2	9.5	89.5	6.5	100.0	9.4	12.5	7.1	47.9	..	23.1	100.0
Vijapur	8.7	11.0	95.6	4.6	100.0	1.8	40.7	9.3	33.1	7.3	7.8	100.0
Total District	100.0	3.7	86.6	13.4	100.0	6.7	11.1	20.4	41.5	2.9	17.4	100.0

APPENDIX NO. 7

CROP PATTERN IN MEHSANA DISTRICT: 1951—52

Cereals		Pulses		Oilseeds		Non-Food Crops		Vegetables		Total	
*63%		13%		11%		11%		2%		100%	
Bajri ..	47.9	Mug ..	10.7	Castor ..	41.1	Cotton ..	77.0	Vegetables ..	65.5		
Jowar ..	39.9	Math ..	35.3	Sarsav ..	30.5	Tobacco ..	2.2	Potato ..	1.0		
*Paddy ..	0.5	Tur ..	10.1	Til ..	16.0	San ..	0.5	Sweet Potato	0.6		
Wheat ..	5.2	Udid ..	2.7	Groundnut	5.0	Cumin ..	15.2	Sugar Cane	4.1		
Barley ..	0.05	Chola ..	2.8	Raydo ..	5.3	Chillies ..	0.4	Fruit Trees	26.6		
Kodra ..	0.02	Guwar..	31.3	Others ..	2.0	Variali ..	0.8	Condiments	1.9		
Banti ..	2.3	Gram ..	1.6			Isabgul ..	1.2				
Chino ..	1.3	Others..	5.1			Others ..	2.7				
Others ..	2.5										
Total ..	100.0		100.0		100.0		100.0			100.0	

Source: District Agricultural Office.

* The above figures are different than the figures in the previous table only because Food Crops in previous table consist of condiments and spices, fruits and vegetables, sugarcane and miscellaneous food crops besides food grains.

APPENDIX NO. 8

AVERAGE YIELDS PER ACRE OF PRINCIPAL CROPS IN MEHSANA DISTRICT: 1949-50

(Yields in lbs.)

District	Rice	Wheat	Barley	Total Cereals (excluding millets)	Millets			Bajri	Ragi	Maize	Kodara	Other millets	Total millets
					Kharif Jowar	Rabi Jowar	Total Jowar						
Mehsana ..	585.4	716.6	746.6	700.6	140.0	*Nil*	140.0	258.9	407.2	*Nil*	448.0	442.9	215.8
Gujerat ..	544.5	440.8	430.7	503.4	236.3	405.9	271.2	333.6	833.1	724.3	719.7	727.7	400.5
Bombay State ..	730.8	357.0	364.2	581.4	423.5	236.6	299.5	258.1	693.1	721.4	665.4	607.7	332.6

District	Total Cereals and millets	Tur	Gram	Other pulses	Total Pulses	Total millets, Cereals and pulses	Total Kharif crops	Total Ragi crops	Total crops	Potato	Cotton (Lbs. of lint)
Mehsana ..	240.8	184.1	240.8	169.6	172.6	233.2	207.5	764.0	233.2	560.0	82.2
Gujerat ..	426.0	401.6	334.9	269.0	311.0	411.7	407.0	434.2	411.7	10602.6	123.1
Bombay State ..	383.4	482.8	301.6	303.7	332.8	376.2	423.6	293.2	376.2	4376.2	93.1

Source: Season and Crop Report of the Bombay State, 1949-50.

APPENDIX NO. 9

CENSUS OF AGRICULTURAL MACHINERY AND IMPLEMENTS: 1951

Taluka	Number of Wooden ploughs	Percentage to total ploughs	Number of iron-ploughs	Percentage to total ploughs	Carts	Tractors
Vijapur	14,675	85.7	2,434	14.3	5,686	1
Visnagar	8,660	75.0	2,891	25.0	3,106	1
Mehsana	11,306	84.9	2,002	15.1	3,631	1
Sami	4,242	99.8	8	0.2	2,679	..
Radhanpur	7,245	97.3	203	2.7	2,889	..
Santalpur	2,868	98.0	59	2.0	2,036	..
Kalol	9,751	99.1	89	0.9	3,946	5
Harij	2,825	99.7	9	0.3	1,518	..
Kheralu	14,230	91.9	1,253	8.1	3,840	1
Kadi	8,299	99.6	33	0.4	3,629	..
Chanasma	11,540	98.1	223	1.9	4,653	1
Patan	13,032	93.6	895	6.4	8,335	..
Sidhpur	10,934	96.5	397	3.5	4,379	..
Total ..	119,607	91.9	10,496	8.1	50,327	10

Source: Bulletin of the Bureau of Economics and Statistics, Bombay, July 1952.

APPENDIX NO. 10

STATEMENT SHOWING THE RAINFALL FIGURES OF THE TALUKAS OF THE MEHSANA DISTRICT FROM THE YEAR 1876 TO 1952-53

Years	Kadi	Kalol	Vijapur	Kheralu	Mehsana	Visna-gar	Patan	Chan-asma	Sidhpur	Harij	Sami	Radhan-pur	Santal-pur
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1876 to 1880 ..	31.39	30.78	22.33	25.19	18.34	19.10	20.80	12.40	19.27	16.16	—	—	—
1881 to 1885 ..	41.72	34.26	45.86	58.91	36.40	39.80	36.17	36.37	47.84	32.82	—	—	—
1886 to 1890 ..	23.62	27.51	28.90	23.69	18.88	27.62	22.43	22.46	27.63	19.67	—	—	—
1891 to 1895 ..	53.19	43.55	45.93	29.98	44.60	41.30	24.62	26.75	27.79	21.75	—	—	—
1892-1893 ..	47.68	50.16	43.13	51.11	40.36	45.30	46.05	42.11	32.85	32.03	—	—	—
1893-1894 ..	50.70	41.78	40.25	45.11	34.25	48.48	37.27	33.57	39.20	25.84	—	—	—
1894-1995 ..	54.57	39.28	44.95	32.45	40.64	41.23	25.22	24.91	26.78	17.97	—	—	—
1895-1896 ..	17.28	16.82	23.98	29.78	29.22	29.57	18.95	15.44	22.36	11.75	—	—	—
1896-1897 ..	37.43	35.40	33.28	39.71	33.78	30.68	26.74	27.81	27.75	20.00	—	—	—
1897-1898 ..	26.22	26.09	30.58	28.66	26.29	24.43	28.15	23.08	24.61	21.95	—	—	—
1898-1899 ..	26.90	37.04	20.63	23.91	18.79	15.60	25.21	17.25	13.40	22.18	—	—	—
1899-1900 ..	3.92	3.40	4.78	7.24	5.29	5.96	2.59	1.42	2.37	1.79	—	—	—

1900-1901	..	18.12	21.69	24.66	25.09	20.87	20.27	26.64	21.47	28.30	16.68	—	—	—
1901-1902	..	12.43	18.55	17.60	13.80	10.68	11.94	9.91	12.09	10.18	9.09	—	—	—
1902-1903	..	31.84	28.05	26.43	24.81	27.66	31.05	19.04	17.86	20.80	13.13	—	—	—
1903-1904	..	20.84	13.51	31.90	21.09	24.10	25.99	17.11	15.08	21.69	20.98	—	—	—
1904-1905	..	9.72	14.25	20.92	18.13	6.60	10.80	5.58	5.28	10.94	6.15	—	—	—
1905-1906	..Average of the whole district—33.99													
1906-1907	..Average of the whole district—32.96													
1907-1908	..	31.74	36.59	38.13	58.27	33.40	33.70	28.69	25.36	41.14	20.40	—	—	—
1908-1909	..	34.00	27.49	40.54	44.06	35.27	36.61	33.59	26.40	37.46	20.27	—	—	—
1909-1910	..	37.98	37.39	31.34	23.87	27.40	28.48	18.33	23.55	27.79	24.27	—	—	—
1910-1911	..	26.55	24.36	27.40	24.19	23.34	29.60	22.53	20.86	37.52	20.59	—	—	—
1911-1912	..	5.61	6.42	6.39	6.25	6.25	3.27	5.20	6.65	2.83	5.22	—	—	—
1912-1913	..	41.82	36.09	28.44	22.39	20.28	24.53	23.25	26.61	21.09	40.22	—	—	—
1913-1914	..	34.17	34.69	30.45	33.79	29.15	38.07	27.35	36.52	33.37	31.31	—	—	—
1914-1915	..	28.37	30.96	35.25	19.05	17.82	24.27	22.38	18.38	24.66	14.98	—	—	—
1915-1916	..	15.31	13.14	14.58	9.70	10.42	11.97	8.82	12.20	6.96	12.21	—	—	—
1916-1917	..	28.92	28.84	23.15	26.18	31.14	29.78	22.53	26.98	30.45	19.15	—	—	—

APPENDIX NO. 10—*Contd.*

STATEMENT SHOWING THE RAINFALL FIGURES OF THE TALUKAS OF THE MEHSANA DISTRICT FROM THE YEAR 1876 TO 1952-53

Years	Kadi	Kalol	Vijapur	Kheralu	Mehsana	Visnagar	Patan	Chanasma	Sidhpur	Harij	Sami	Radhanpur	Santalpur
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1917-1918 ..	56.44	46.82	50.31	34.47	46.30	41.58	15.28	37.91	42.77	42.56	—	—	—
1918-1919 ..	7.74	9.40	9.48	15.63	17.59	17.55	11.72	10.79	13.15	11.22	—	—	—
1919-1920 ..	29.60	26.06	34.69	30.11	34.17	32.26	26.97	21.17	29.10	23.28	—	—	—
1920-1921 ..	26.24	23.04	27.02	16.41	21.25	21.95	11.85	16.07	16.92	—	—	—	—
1921-1922 ..	31.09	34.89	37.41	32.72	36.43	29.96	27.64	31.33	23.92	33.08	—	—	—
1922-1923 ..	27.21	26.84	26.48	20.96	29.25	23.02	22.46	27.66	24.21	16.91	—	—	—
1923-1924 ..	10.57	11.19	9.47	8.60	10.04	12.82	9.29	8.02	10.59	6.73	—	—	—
1924-1925 ..	29.10	25.50	26.14	31.66	21.14	22.60	17.35	15.16	28.19	20.92	—	—	—
1925-1926 ..	18.80	21.48	15.81	15.29	10.34	14.02	6.69	7.10	11.43	4.63	—	—	—
1926-1927 ..	30.22	40.18	40.60	38.85	34.99	27.83	42.41	41.41	41.33	42.66	—	—	—
1927-1928 ..	51.11	49.98	52.21	47.05	47.18	49.21	47.68	54.90	42.04	36.34	—	—	—
1928-1929 ..	20.03	19.38	23.95	21.48	17.03	22.10	19.80	17.44	18.42	16.97	—	—	—

1929-1930	..	17.33	15.65	18.05	22.25	13.42	18.63	12.96	14.19	14.84	11.86	—	—	—
1930-1931	..	26.47	24.63	27.10	24.72	19.03	19.76	22.70	18.89	19.40	14.11	—	—	—
1931-1932	..	33.21	25.99	36.36	31.03	25.09	27.99	22.52	21.97	26.41	23.25	—	—	—
1932-1933	..	26.19	24.74	23.42	22.12	24.84	23.93	31.42	25.65	22.40	20.47	—	—	—
1933-1934	..	44.85	36.65	45.29	42.60	30.33	43.91	32.91	31.92	34.85	24.34	—	—	—
1934-1935	..	26.63	26.79	38.49	34.90	26.20	25.52	30.20	31.98	32.07	24.89	—	—	—
1935-1936	..	18.73	18.69	18.19	17.91	22.41	20.81	11.55	16.36	16.77	15.33	—	—	—
1936-1937	..	14.27	15.18	11.72	10.34	11.02	12.20	10.56	17.22	10.58	13.50	—	—	—
1937-1938	..	33.98	39.30	41.90	43.72	48.36	44.11	30.55	33.99	40.52	32.56	—	—	—
1938-1939	..	16.63	16.59	18.50	18.28	18.54	17.11	20.97	13.89	20.18	12.92	—	—	—
1939-1940	..	14.22	17.29	17.14	10.25	13.24	11.32	11.36	10.44	15.92	6.95	—	—	—
1940-1941	..	18.32	16.54	18.82	11.64	15.48	16.97	13.73	12.34	12.01	12.27	—	—	—
1941-1942	..	37.90	32.76	24.62	28.84	22.84	32.64	25.95	20.99	29.37	30.50	—	—	—
1942-1943	..	26.69	36.81	27.76	27.39	22.82	23.95	29.90	22.89	29.55	20.45	—	—	—
1943-1944	..	26.69	36.81	27.46	27.39	22.82	23.95	29.90	22.89	29.55	20.45	—	—	—
1944-1945	..	37.02	37.49	47.50	49.39	34.72	40.42	35.84	35.23	33.54	32.90	—	—	—
1945-1946	..	27.95	31.94	19.81	36.32	29.56	30.72	34.46	21.25	23.84	23.84	—	—	—

APPENDIX NO. 10—*Contd.*

STATEMENT SHOWING THE RAINFALL FIGURES OF THE TALUKAS OF THE MEHSANA DISTRICT FROM THE YEAR 1876 TO 1952-53

Years	Kadi	Kalol	Vijapur	Kheralu	Mehsana	Visnagar	Patan	Chanasma	Sidhpur	Harij	Sami	Radhanpur	Santalpur
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1946-1947 ..	18.90	33.21	16.91	24.16	21.97	20.07	20.92	15.17	21.27	16.60	—	—	—
1947-1948 ..	22.95	24.95	19.80	18.23	17.16	21.36	13.73	13.23	16.49	17.08	—	—	—
1948-1949 ..	6.7	7.98	9.11	9.20	9.58	9.08	14.73	7.81	8.68	10.30	7.56	13.97	7.87
1949-1950 ..	14.29	17.53	11.50	19.52	11.64	10.42	14.99	18.14	20.35	20.27	9.07	13.27	12.77
1950-1951 ..	48.85	51.61	49.72	30.27	57.52	30.89	32.59	28.92	30.07	30.33	27.33	20.36	22.41
1951-1952 ..	10.81	9.09	13.04	9.18	12.50	7.72	12.62	10.24	10.33	10.82	9.49	16.42	10.82
1952-1953 ..	26.53	25.97	33.98	31.63	29.03	27.65	20.19	17.11	20.64	15.61	16.82	16.53	11.41

Sources : 1. Statistical Abstracts of Baroda State.
2. Economical and Political Life of Baroda by D. M. S. and Gowden (From Shri M. M. Patil, M.L.A.).
3. Report on Famine Operation in Baroda State for the years 1900-01, 1901-02 and 1902-03.
4. A short account of Scarcity of 1896-97 of Baroda Territory.
5. Survey Settlement Reports.

APPENDIX NO. 11

IRRIGATION WORKS IN MEHSANA DISTRICT

S.No.	Name of work	Catchment area in sq. miles	Capacity in mcft.	Area irrigable by the quantity available in bighas	Total expenditure incurred in rupees	Income anticipated in rupees	Remarks
1	2	3	4	5	6	7	8
1	Kadarpur Reservoir .. (Shree Chimnabai Sarover)	30.00	767.00	6,500	7,24,205	22,200	
2	Thol Nawa Tank ..	10.00 Besides it will be fed by the eastern drainage cut draining an area of 60 sq. miles	447.00	7,200	1,22,774	16,400	
3	Vatrasar Tank	6.00	23.00	1,300	4,212	2,600	
4	Sher Tank	5.50	75.50	2,100	33,000	4,200	
5	Ambela Pipardi Tank ..	0.66	6.00	175	4,800	360	
6	Anawada Weir across the Saraswati	—	200 cusecs	13,000	1,51,815	26,000	Weir breached in 1918
7	Chandrasan Tank ..	21.00	42.50	1,200	38,000	2,400	
8	Piplana Tank	10.00	60.00	1,700	26,640	5,400	In breached condition
9	Khokhla Tank	17.00	102.00	1,800	52,180	2,600	In breached condition
10	Gowna Jamnapur Tank	22.00	40.00	600	7,730	Not available	In breached condition

Source ; Technical Papers Series No. V, Volume I, Public Works Department, Baroda, 1927.

APPENDIX NO. 12

VILLAGES AND EXTENT OF WASTE LAND BY TALUKAS

	Area of waste land Bigha-vasa
Mehsana Taluka	
Akhoj	1333 — 2
Langhnaj	600 — 6
Vadasan	501 — 6
Jamnapur	301 — 13
Juni Shedhvi	306 — 12
Valisan	360 — 16
Sametra	392 — 9
Hedurajgar	337 — 10
Mitha	548 — 8
Dediasan	347 — 0
Harij Taluka	
Khakhadi	596 — 2
Dunvada	338 — 5
Vejawada	726 — 10
Sher	377 — 2
Harij	1738 — 2
Sidhpur Taluka	
Upera	2511 — 12
Tanavada	1260 — 9
Dethali	444 — 7
Runasan	386 — 16
Nadana	1840 — 6
Methan	542 — 5
Mehalaj	642 — 10
Lunasan	1453 — 16
Kalol Taluka	
Amrapur	683 — 7
Borij	483 — 5
Motimogan	488 — 2
Randesan	310 — 4
Vasanjada Kalol	302 — 6
Santy	513 — 17
Vijapur Taluka	
Hirpura	1192 — 0
Devpura	701 — 12
Gadhada	1730 — 17
Soji Rustapura	1558 — 8
Damala	768 — 18
Bamanva	546 — 9
Fudeda	407 — 17
Kelisan	323 — 2
Kolwada	323 — 12
Vadhana	538 — 16
Samoda	1088 — 16
Kot	748 — 0
Manpur	394 — 19
Vanagla	256 — 8
Kavampur	895 — 12
Patan Taluka	
Norta Talpad	407 — 6
Norta Vaulo	836 — 16
Borsan	529 — 18
Amliasan	538 — 12
Mumlipati	431 — 14
Santi	480 — 11
Dervanto	2275 — 8
Lodhi	709 — 17
Kolodhi	315 — 41
Nayata	1128 — 1
Vevloda	1448 — 9
Sariad	1101 — 10
Moliwada	727 — 18
Maumd	418 — 9
Bhadrada	686 — 5
Kansa	404 — 10
Kothwada	390 — 12
Halampur	551 — 8
Ghacheli	452 — 14
Bepadar	576 — 4
Vagdod	445 — 11
Chanasma Taluka	
Chhamichha	945 — 12
Mithi-Ghayal	1660 — 8
Jetpur	1722 — 5
Ronila	796 — 3
Sampavada	1870 — 0
Delwada	1489 — 11
Dodivada	882 — 2
Surpura	425 — 4
Chandroda	2830 — 4
Sankhalpur	1623 — 15
Akata	622 — 0
Vadavli	714 — 0
Behar	633 — 10
Kamboli	1205 — 6
Delmal	767 — 18
Kanoda	611 — 7

	Area of waste land Bigha-vasa
Chanasma Taluka (contd.)	
Asjol	572 — 3
Rapura	2242 — 17
Delpura	1286 — 11
Sajanpura	601 — 18
Kadi Taluka	
Indrada	418 — 2
Kanjari	845 — 14
Chandrasan	579 — 17
Naghavpura	430 — 10
Zaloda	1056 — 18
Thol	589 — 2
Demsan	939 — 17
Nandana	416 — 15
Punlidra	779 — 5
Bavlu	1018 — 0
Merad	481 — 19
Visnagar Taluka	
Udalpur	471 — 10
Kada	489 — 11
Kamlapur Gothwa	380 — 15
Gothwa	578 — 11
Dhamnava	811 — 14
Valam	486 — 8
Kheralu Taluka	
Kheralu	816 — 3
Panchha	884 — 3
Vithoda	617 — 11
Lunva	842 — 2
Vavdi	1010 — 5
Damoda	1006 — 5
Chardi	1006 — 13
Pipaldar	1935 — 7
Dundai	633 — 3
Umad	479 — 0
Ansol	492 — 22
Naniwada Kadarpur	335 — 11
Sanool	301 — 13
Halpur	498 — 0
Madhaman	371 — 10
Mandala	572 — 18
Balad	574 — 15
Hirawani Moti	389 — 0
Hirawani Nani	391 — 18
Machhava	760 — 10
Mahboobpura	306 — 0
Varetha	332 — 8
Karbatia	331 — 6
Chada	438 — 9
Vaghwadi	377 — 1
Charsa	525 — 13
Sangthala	402 — 16
Maska	366 — 15

APPENDIX NO. 13

PROPOSED RABARI SETTLEMENTS BY TALUKA CONGRESS COMMITTEE, 1952

Taluka	*Village*
Patan	Manund, Valoda, Norta-talpad.
Chanasma	Kanoda, Ranela, Jetpur, Vadavali, Shankhalpur, Chadroda, Delmal, Mithadharava, Sapawad.
Harij	Kamboi.
Kadi	Kanjari, Nadan, Bavlu.
Sidhpur	Sunvada, Bhankhar.
Mehsana	Mitha.
Visnagar	Udalpur, Dhumnva.

APPENDIX NO. 14

LIVESTOCK CENSUS: 1951

(1) Bovine Population

Talukas	Cattle					Buffaloes					Total Bovine Population	Density per sq. mile
	Males over 3 Years		Females over 3 Years		Young	Males over 3 Years		Females over 3 Years		Young		
	Working Bullocks	All Males	In Milk	All Females	Stock below 3 years	Working Buffaloes	All Males	In Milk	All Females	Stock below 3 years		
1	2	3	4	5	6	7	8	9	10	11	12	13
Vijapur	22,830	23,500	2,190	5,302	4,498	26	135	21,115	35,486	21,140	90,061	248.1
Visnagar	13,336	13,634	3,527	5,750	2,872	96	96	15,523	17,623	8,638	48,613	277.7
Mehsana	16,944	17,318	3,003	7,168	4,230	78	167	12,289	22,253	13,764	64,900	223.0
Sami	9,966	10,647	5,564	13,598	8,073	2	59	2,492	5,328	3,321	41,026	78.5
Radhanpur	9,496	10,354	4,204	9,669	6,591	15	184	2,894	5,173	2,980	34,951	129.9
Santalpur	6,638	6,929	5,263	10,414	7,716	9	16	1,722	3,258	1,929	30,262	77.0
Kalol	14,846	15,608	2,574	5,691	3,440	6	196	13,884	21,638	13,905	60,478	116.3
Harij	5,639	5,771	2,853	6,041	3,538	—	17	2,387	4,330	2,177	21,874	137.5
Kheralu	24,435	24,987	4,282	9,257	7,443	1	156	16,088	27,768	16,175	85,786	232.4
Kadi	13,419	13,889	3,319	7,189	3,959	22	112	10,500	17,321	8,582	51,052	159.5
Chanasma	17,566	17,763	5,450	11,244	5,324	—	54	10,030	17,590	8,919	60,894	178.5
Patan	22,234	23,964	7,787	15,923	11,158	176	326	11,033	20,250	10,200	81,827	202.0
Sidhpur	19,168	19,683	3,761	8,256	5,383	—	79	11,790	21,150	11,879	66,400	258.3
District Total	1,96,485	2,04,047	53,777	1,15,502	74,200	431	1,597	1,31,747	2,19,174	1,23,604	7,38,124	178.8

APPENDIX NO. 15

LIVESTOCK CENSUS: 1951

(2) SHEEP, GOATS, ETC.

Talukas	Sheep			Goats			Horses	Donkeys	Fowls	Ducks
	Below one year	1 to 3 years	Over three years	Below one year	1 to 3 years	Over three years				
Vijapur	425	2,834	3,685	1,288	6,537	8,429	391	3,538	1,943	6
Vishnagar	2,200	3,095	2,943	2,977	2,143	2,540	236	1,053	1,235	2
Mehsana	483	3,712	3,912	1,209	4,877	6,133	319	1,760	153	—
Sami	1,105	2,507	6,362	1,604	4,354	7,003	598	1,061	222	—
Radhanpur	1,163	4,328	7,757	959	2,716	5,674	442	1,728	742	200
Santalpur	1,453	7,872	9,107	960	4,383	4,198	460	534	209	—
Kalol	326	1,453	2,501	1,340	3,634	5,927	126	1,724	1,323	9
Harij	260	709	1,240	835	1,422	2,938	466	645	124	—
Kheralu	465	1,312	2,840	1,540	6,305	11,900	603	1,911	1,508	—
Kadi	500	1,128	1,922	1,527	3,110	5,575	394	1,063	1,444	—
Chanasma	767	1,924	3,980	1,617	3,434	8,425	311	2,095	429	—
Patan	1,713	4,562	6,432	3,158	7,593	10,726	808	2,800	2,292	12
Sidhpur	528	2,037	2,967	1,012	4,367	5,389	384	2,375	1,984	5
Total District ..	11,388	37,443	55,678	20,026	54,875	94,857	5,538	22,287	13,708	234

Source : Bulletin of the Bureau of Economics and Statistics, Bombay, July, 1952.

APPENDIX NO. 16

LIST OF HOSPITALS AND DISPENSARIES IN MEHSANA DISTRICT AND THE STRENGTH OF THE STAFF, BEDS, ETC.

S.No.	Name	Number of Beds			Nurses		Location	
		Hospital		Maternity Home	Male	Female		
		M.	F.					
	Hospitals							
1.	Civil Hospital, Mehsana ..	10	6	10	1	4		
2.	Patan General Hospital and Maternity Home ..	25	25	18	3	7		
3.	Kadi Hospital, Kadi	6	6	6	1	1		
4.	Sidhpur Hospital	2	—	10	—	1		
5.	Visnagar ,,	15	15	10	—	5		
6.	Radhanpur ,,	16	—	—	—	1		
	Dispensaries							
7.	Vadnagar Disp. ..	3		3	—	1	Kheralu	Tal.
8.	Kheralu ,, ..	2		—	—	1	,,	,,
9.	Chanasma ,, ..	2		3	—	1	Chanasma	,,
10.	Vijapur ,, ..	2		3	—	1	Vijapur	,,
11.	Kalol ,, ..	2		10	—	2	Kalol	,,
12.	Harij ,, ..	2		—	—	4	Harij	,,
13.	Dhinjoj ,, ..	—		3	—	1	Chanasma	,,
14.	Behcharaji ,, ..	2		—	—	—	,,	,,
15.	Langhnej ,, ..	—		—	—	—	Mehsana	,,
16.	Kungher ,, ..	—		—	—	—	Patan	,,
17.	Pansar ,, ..	—		—	—	—	Kalol	,,
18.	Nardipur ,, ..	—		—	—	—	,,	,,
19.	Unaoo ,, ..	—		—	—	—	,,	,,
20.	Khavad ,, ..	—		—	—	—	,,	,,
21.	Petapur ,, ..	—		—	—	—	,,	,,
22.	Balisana ,, ..	—		—	—	1	Patan	,,
23.	Wagdod ,, ..	—		—	—	—	,,	,,
24.	Sardhav ,, ..	—		—	—	—	Kalol	,,
25.	Pilwai ,, ..	—		3	—	1	Vijapur	,,
26.	Kherva ,, ..	—		—	—	—	Mehsana	,,
27.	Valam ,, ..	—		3	—	1	Visnagar	,,

APPENDIX NO. 16—*Contd.*

S.No.	Name	Number of Beds		Nurses		Location	
		Hospital	Maternity Home	Male	Female		
28.	Unjha Disp. ..	—	3	—	1	Sidhpur	Tal.
29.	Vadsar ,, ..	—	—	—	—	Kalol	,,
30.	Manund ,, ..	—	—	—	—	Patan	,,
31.	Sariyad ,, ..	—	—	—	—	,,	,,
32.	Dunavada ,, ..	—	—	—	—	,,	,,
33.	Umta ,, ..	—	—	—	—	Kheralu	,,
34.	Kahoda ,, ..	—	—	—	—	Sidhpur	,,
35.	Unava ,, ..	—	—	—	—	,,	,,
36.	Thol ,, ..	—	—	—	—	Kadi	,,
37.	Soja ,, ..	—	—	—	—	Kalol	,,
38.	Vasai ,, ..	—	—	—	—	Vijapur	,,
39.	Ladol Disp. (Ayurvedic)	—	—	—	—	,,	,,
40.	Meda Adrej Disp.	—	—	—	—	Kadi	,,
41.	Sudasana ,, ..	—	—	—	—	Kheralu	,,
42.	Satlasana ,, ..	3	—	—	—	,,	,,
43.	Valasana ,, ..	—	—	—	—	,,	,,
44.	Sami ,, ..	—	—	—	—	Sami	,,
45.	Mujpur ,, ..	—	—	—	—	,,	,,
46.	Santalpur ,, ..	2	—	—	—	Vijapur	,,
47.	Varshi ,, ..	2	—	—	—	,,	,,
48.	Mansa ,, ..	2	—	—	1	,,	,,
49.	Varsoda ,, ..	—	—	—	—	,,	,,
50.	Santhal ,, ..	—	—	—	—	Mehsana	,,
51.	Balol ,, ..	—	—	—	—	,,	,,
52.	Kolwada ,, ..	—	—	—	—	,,	,,
53.	Modhera subsidised M.P.C.(Auyurvedic)	—	—	—	—	Chanasma	,,

APPENDIX NO. 17

STATEMENT SHOWING HEALTH SERVICES IN URBAN AREAS IN GUJERAT DISTRICTS: 1950

District	Medical Graduates				Medical Licentiates				Epidemic Staff		Sanitary and Health Inspectors	Vaccinators		Inspector of Vaccination	School Medical Officers	Other Health Staff
	With Public health Qualification		Without Public Health Qualification		With Public Health Qualification		Without Public Health Qualification		Epidemic Medical Officer	Other Staff		Male	Female			
	Whole time	Part time	Whole time	Part time	Whole time	Part time	Whole time	Part time								
Ahmedabad ..	—	—	—	—	—	—	—	—	—	—	3	—	—	2	—	—
Kaira	—	—	—	—	—	—	—	—	—	—	11	1	—	4	—	—
Broach	1	—	—	—	—	—	—	—	—	—	6	1	—	1	—	—
Surat	1	—	—	—	—	—	—	—	—	—	18	3	—	2	—	—
Panch Mahals	—	—	—	—	—	—	—	—	—	—	4	1	—	3	—	—
Baroda	1	—	—	—	—	—	—	—	—	—	15	3	—	—	—	—
Mehsana	—	—	—	—	—	—	—	—	—	—	8	1	—	2	—	—
Amreli	—	—	—	—	—	—	—	—	—	—	1	1	—	1	—	—
Banas Kantha	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Sabar Kantha	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total Bombay State ..	94	25	43	2	44	—	28	—	—	—	342	91	1	18	21	92

Source : Annual Report on Public Health, Government of Bombay.

APPENDIX NO. 18

STATEMENT SHOWING HEALTH SERVICES IN RURAL AREAS IN GUJERAT DISTRICTS: 1950

District	Medical Graduates				Medical Licentiates				Epidemic Staff						
	With Public Health Qualification		Without Public Health Qualification		With Public Health Qualification		Without Public Health Qualification		Epidemic Medical Officer	Other Staff	Sanitary and Health Inspectors	Vaccinators		School Medical Officers	Other Health Staff
	Whole time	Part time	Whole time	Part time	Whole time	Part time	Whole time	Part time				Male	Female		
Ahmedabad	—	—	1	—	—	—	—	—	1	—	9	13	—	—	—
Kaira ..	1	—	—	—	—	—	—	—	1	—	4	23	—	—	—
Broach ..	1	—	—	—	—	—	—	—	1	—	4	14	—	—	—
Surat ..	1	—	—	—	—	—	—	—	—	—	6	37	—	—	13
Panch Mahals	1	—	—	—	—	—	—	—	—	—	4	19	—	—	—
Baroda ..	1	—	—	—	—	—	—	—	1	—	5	19	—	—	—
Mehsana ..	1	—	—	—	—	—	—	—	—	—	6	23	—	—	—
Amreli ..	—	—	—	—	—	—	—	—	1	—	4	7	—	—	—
Banas Kantha	—	—	—	—	—	—	—	—	—	—	6	17	—	—	—
Sabarkantha ..	—	—	—	—	—	—	—	—	—	—	4	14	—	—	—
Total Bombay State	20	—	2	1	1	—	—	—	26	—	186	532	—	—	285

Source : Annual Report on Public Health, Government of Bombay.

APPENDIX NO. 19

MATERNITY AND CHILD WELFARE CENTRES, HEALTH VISITORS AND TRAINED MIDWIVES IN RURAL AND URBAN AREAS IN GUJERAT DISTRICTS: 1950

District	Maternity and Child Welfare Centres maintained by						Trained Health Visitors		Trained Midwives		Trained Dais	
	Government		Local and Municipal Bodies		Other Agencies							
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Ahmedabad City ..	—	—	—	2	—	—	—	2	—	12	—	—
Ahmedabad	—	—	—	—	1	—	1	—	—	—	—	—
Kaira	—	—	—	1	—	—	—	—	11	2	—	—
Broach	1	—	2	—	—	1	—	—	—	—	3	—
Surat	—	—	—	—	—	—	—	—	4	1	9	1
Panch Mahals	—	—	—	1	1	—	—	—	—	2	1	—
Baroda	—	1	—	—	—	1	—	2	—	2	—	—
Mehsana	—	—	—	—	—	—	—	—	—	2	6	2
Amreli	2	1	—	—	—	—	—	—	—	1	6	1
Banas Kantha	—	—	—	—	—	—	—	—	—	—	—	—
Sabar Kantha	—	1	—	1	—	—	—	—	—	2	—	2
Total Bombay State ..	23	4	10	69	11	66	25	58	52	153	57	75

Source : Annual Report on Public Health, Government of Bombay.